LETTING DATE 06/15/10

DYNAMIC MESSAGE SIGNS

CERRO GORDO COUNTY ITS-018-5(146)--25-17

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Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

CERRO GORDO COUNTY

DYNAMIC MESSAGE SIGNS

US 18 DMS 2 Miles East of US 65 at Station 226+25

SCALES: As Noted

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2009, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions, shall apply to construction work on this project.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY

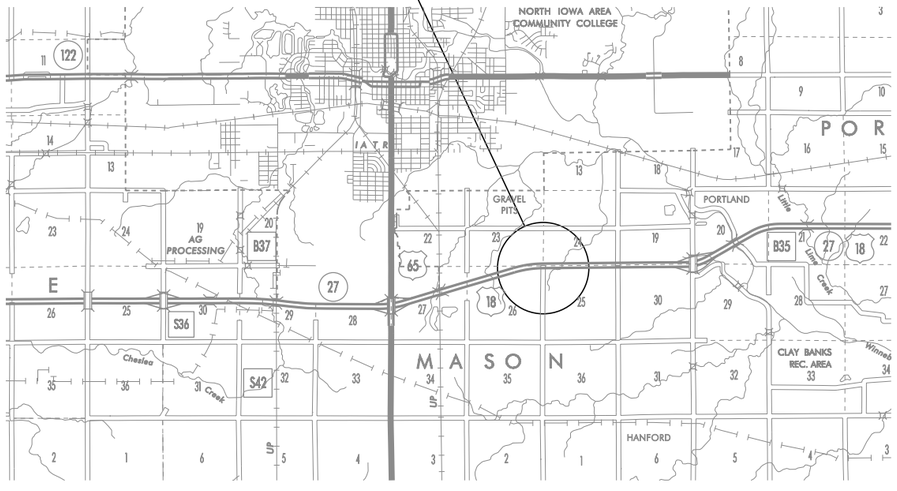
REVISIONS

TOTAL
36

PROJECT IDENTIFICATION NUMBER
10-03-076-010
PROJECT NUMBER
ITS-018-5(146)--25-17

INDEX OF SHEETS

DMS #621
US 18 WESTBOUND
STA. 226+25 Metric)
M.P. 188.17



LOCATION MAP SCALE
0 1 2 3
Miles

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.01	John M. Narigon	Primary Signature Block
V.1	James R. Hauber	Structural Details

LICENSED PROFESSIONAL ENGINEER
John M. Narigon
11842
IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date 03/01/2010

John M. Narigon
Printed or Typed Name

My license renewal date is December 31, 2011

Pages or sheets covered by this seal:
A.01, A.02, B.01-B.04, C.01-C.04, N.01-N.14, X.01-X.07

SIGNING
I-35 SOUTHBOUND
STA. 888+85 TO STA. 1028+90
M.P. 194.35 TO M.P. 197.68

DMS #621
US 18 WESTBOUND
STA. 226+25 (Metric)
M.P. 188.17

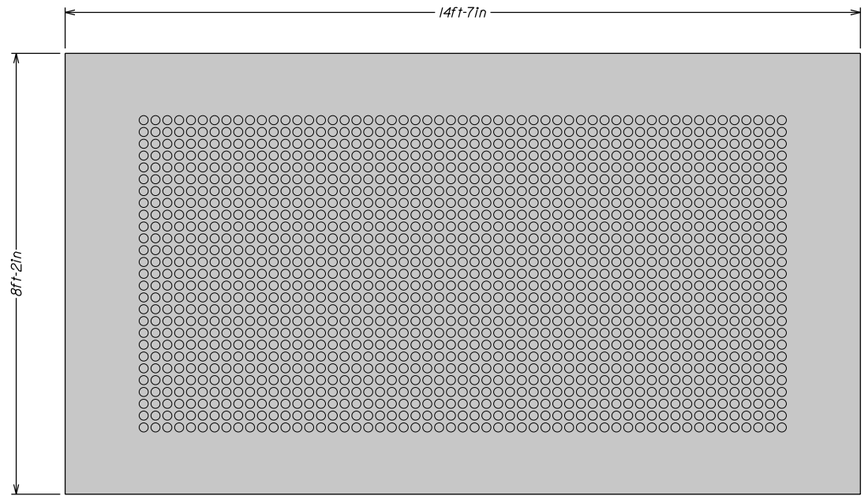
SIGNING
US 18 WESTBOUND
STA. 199+10 TO STA. 228+45
M.P. 186.44 TO M.P. 188.26

LOCATION MAP SCALE
0 1 2 3
Miles

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER A.02

4/19/2010 jnarigo W:\Projects\0307601010\TrafEng\Signing\25-17-0185-146\170185146_a01.sht

DIMENSIONAL INFORMATION



Manufacturer: Skyline
Model Number: VMSLED-L-3-18F-27X55-I
Type: Full Matrix
Pixels: 55 x 27 (width x height)

Height: 8'2"
Width: 14'7"
Depth: 1'4"

Weight: 1500 lbs.

TRANSPORTATION REQUIREMENTS

All material and equipment necessary to transport the sign to or from the storage site and/or installation site shall be furnished by the Contractor.

The sign shall be transported in the upright position. At no point in time shall the sign be laid on its side, front, or back.

To avoid damage to the sign during transport, consult the sign manufacturer to determine the correct method to secure the sign to the trailer.

Any damage incurred during transportation shall be the responsibility of the Contractor.

STORAGE REQUIREMENTS

All material and equipment necessary to store the sign at the designated site shall be furnished by the Contractor.

The sign shall be stored upright and level. At no point in time shall the sign be laid on its side, front, or back.

The sign must be blocked up at least three inches from the ground. When the sign is not stored on concrete, extra blocking shall be used to provide for settlement.

Remove shipping support legs from the DMS after installation on the support structure.

During transportation and storage, the DMS shall be secured at all times to prevent tipping. The DMS shall be secured with dead man anchors or other suitable methods. The DMS shall not be marred by the selected method. Tipping may be caused by any number of reasons, but high winds and other weather related events are the primary concern while the DMS is on the ground.

Any damage resulting from the failure to properly secure the DMS shall be the responsibility of the Contractor.

ATTACHMENT HARDWARE

All materials necessary to attach the DMS to the support structure will be furnished with the DMS.

LIFTING REQUIREMENTS

The following procedures shall be followed when lifting the sign for either removal or installation, including lifting the sign from the storage site to the trailer or the reverse, and from the trailer to the support structure or the reverse.

The crane and lifting bar shall be rated to lift a minimum of 2000 pounds.

Any damage incurred during lifting shall be the responsibility of the Contractor.

The information presented below is from the literature provided by the manufacturer. Consult the manufacturer for complete lifting requirements.

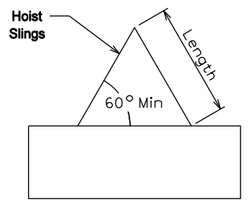
** Skyline Sign Lift Procedure **

When removing an existing sign, the pick angles or lifting brackets may need to be furnished by the Contractor. Consult Skyline for specific information about the pick angle or lifting bracket requirements.

1. When the sign arrives, it should remain secured at all times, either to the trailer or to the crane, until fully mounted on the sign support structure or until secured to the ground.

2. Remove the strapping blocks from the top of the sign to free the brackets to in order to attach the lifting sling.

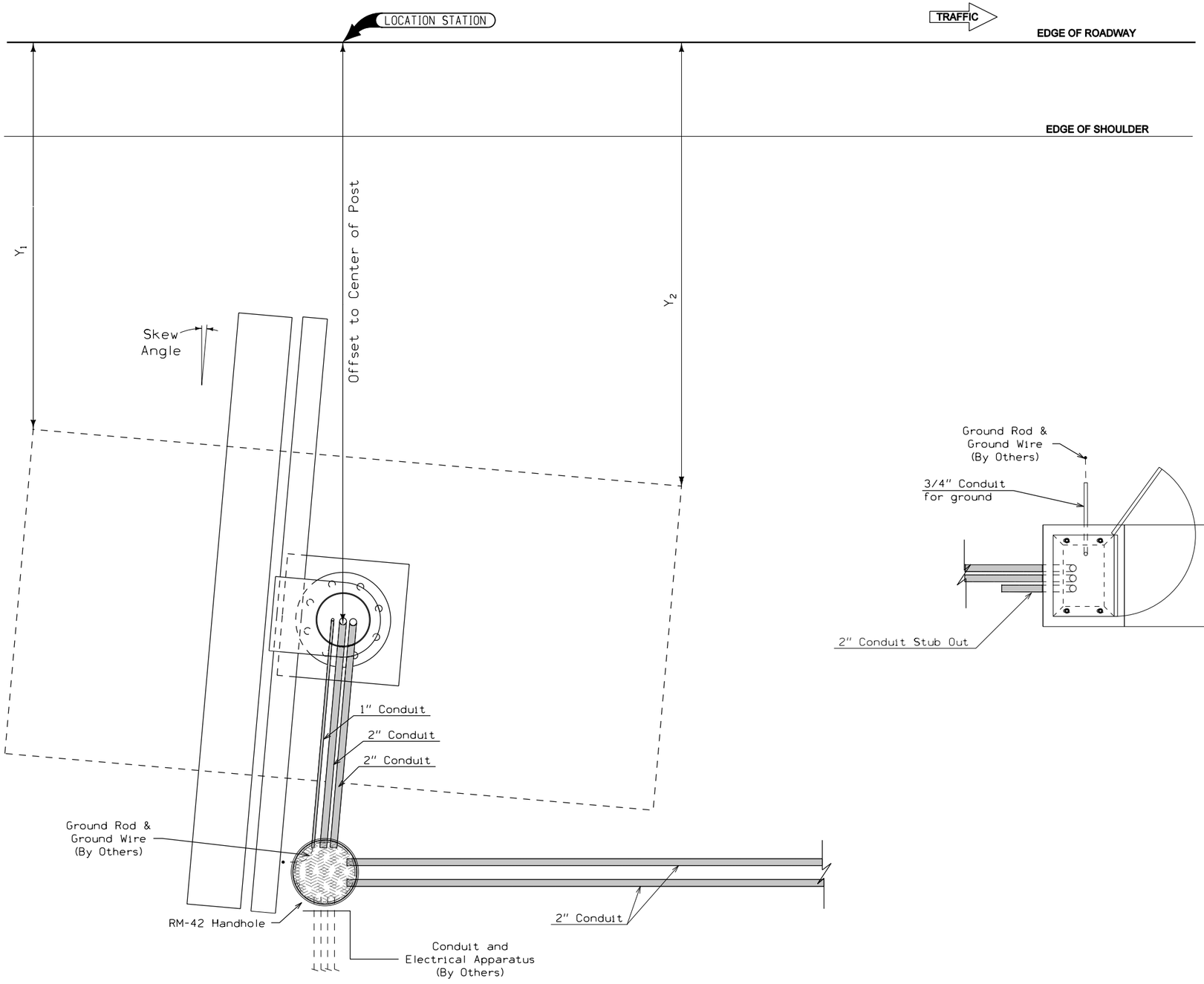
3. Secure the crane's lifting slings to the sign using the appropriate sling length. Attach the slings to the pick angles on the top of the sign using the appropriate spreader bars and/or clevises. Calculate the hoisting sling's length by measuring the distance between the pick angles and a minimum 60 inside angle with the sign.



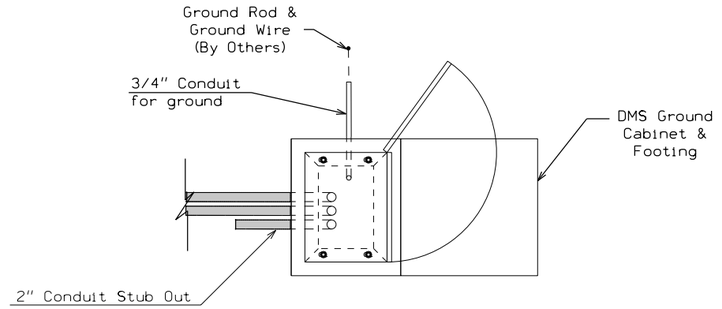
4. Lift the sign into position.

5. If applicable, remove any shipping support legs from the underside of the DMS, and lifting support angles from the top of the DMS. Plug and seal all openings as per the manufacturer's requirements. Any damage incurred by improperly sealed openings shall be the responsibility of the Contractor.

DETAILS OF ROADSIDE DYNAMIC MESSAGE SIGN



PLAN VIEW



SITE INSTALLATION NOTES:

Contractor is to install the sign footing, sign support structure, DMS, the ground cabinet footing, ground cabinet, RM-38 junction box, and conduit between the handhole and each footing.

All wiring for communications, electrical service, and grounding will be completed by the DOT.

The DOT will furnish the ground cabinet to be installed.

The ground cabinet footing shall be located within 25 feet of the RM-38 junction box, beside or behind the DMS and oriented as indicated relative to traffic. In locations with a ditch, the footing shall not be located within the ditch bottom, but should be located beyond the top of the backslope, if possible. The Engineer shall approve the location and orientation prior to placement of the footing.

Install socket type bell ends on conduit protruding from the footing. Finished conduit (including bell end) is to protrude 5 to 6 inches from the top of footing.

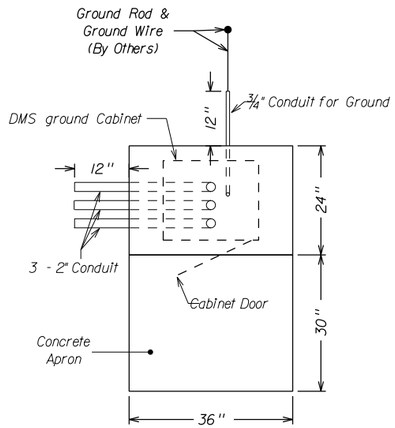
Mark the locations of all conduit entering the sign support structure footing and the ground cabinet footing. Locate marks on the side the conduit enters, near the top, to ensure visibility after backfilling and shaping.

Install handhole and conduit and complete site restoration per section 2523.

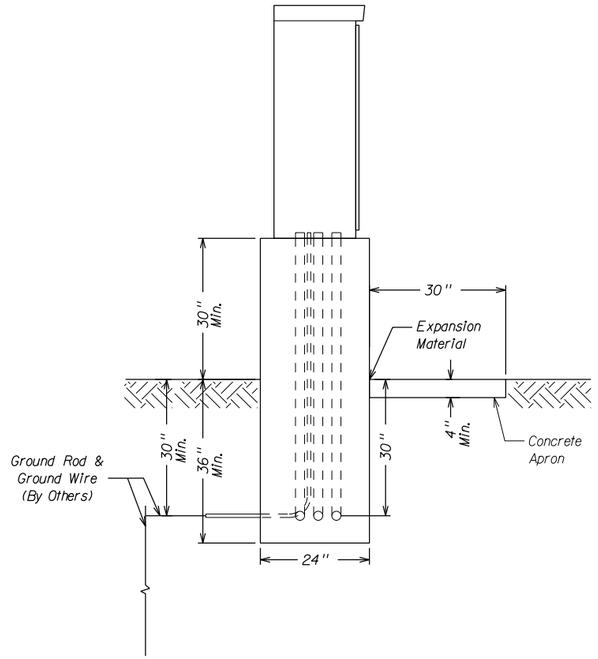
SITE INSTALLATION DETAILS FOR ROADSIDE DYNAMIC MESSAGE SIGN

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER B.02

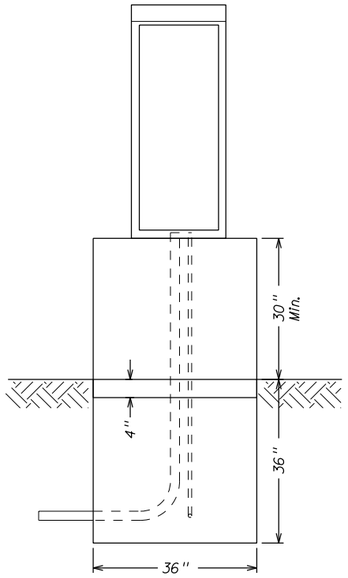
4/19/2010 jnarigo W:\Projects\0307601010\TrafEng\Signing\25-17-0185-146\170185146_b01.sht



Top View



Side View



Front View

Center DMS Cabinet on footing and attach with pull out anchors. Refer to IM 453.09 for approved anchors.

Center conduits in the footing. Prior to pouring the footing, confirm that no conflicts exist between the conduit placement and the ground cabinet. Maintain at least 2" of clearance to the edge of the ground cabinet.

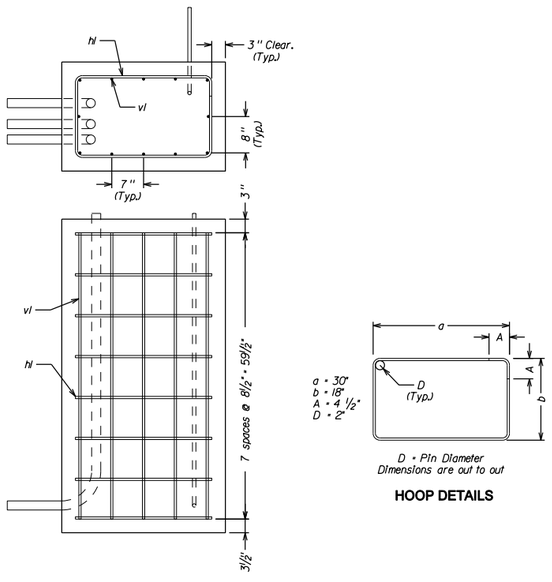
Cap all open ends of conduit before backfilling. For future reference, mark the locations of all conduit entering the footing on the side which the conduit enters. Locate marks near the top to ensure they remain visible after backfilling and shaping.

Install socket type bell ends on conduit protruding from the footing. Finished conduit (including bell end) is to protrude 5 to 6 inches from the top of footing.

Use Class C Structural Concrete for the footing. Meet the requirements of section 2403 for placement of the concrete. The top of the footing is to be level, and the top edges rounded with an edger. Provide forms of sufficient strength to prevent warping, bulging, or other deflections.

Epoxy coated reinforcement to meet the requirements of section 2404.

Conduit, excavation, backfilling, and site restoration to meet the requirements of section 2523.



HOOP DETAILS

Reinforcing Details

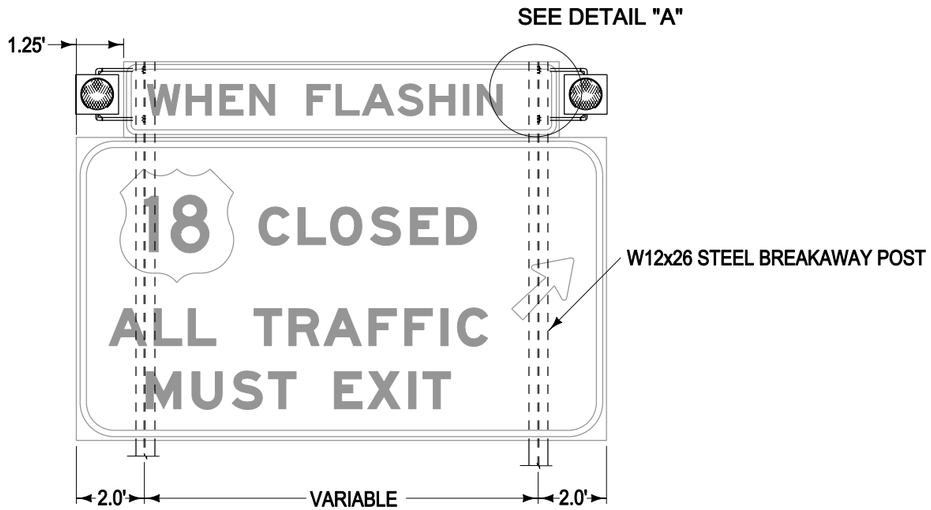
EPOXY COATED REINFORCEMENT QUANTITIES per footing				
BAR	QTY	SIZE	LENGTH	WEIGHT
v1	12	#4	59½	39.8
h1	7	#4	105	46.7
Total Weight				86.5

CONCRETE QUANTITIES per footing location	
Footing	1.22 cu yd
Pad	0.09 cu yd

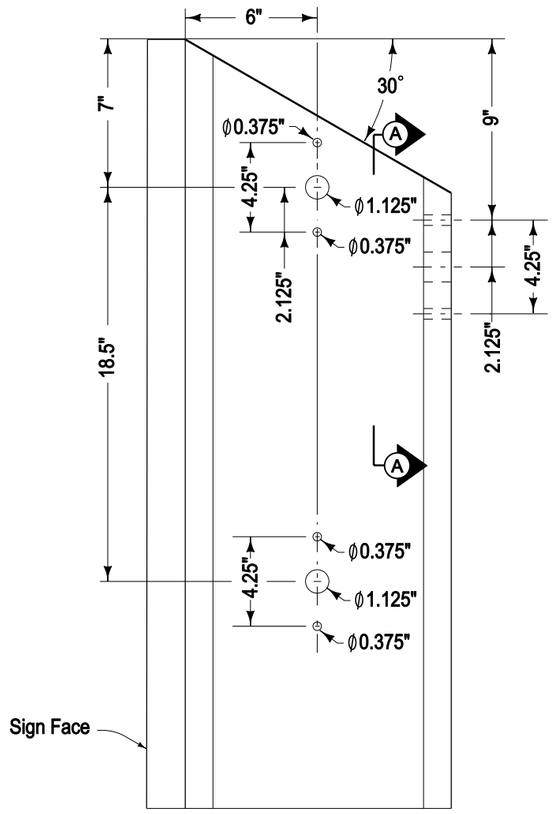
DMS GROUND CABINET FOOTING DETAILS

BEACONS TO BE PROVIDED AND INSTALLED BY OTHERS

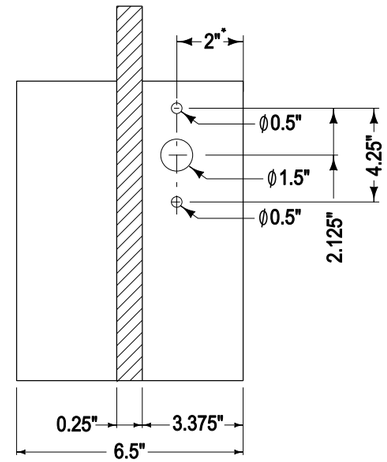
ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZATION



TYPICAL INSTALLATION
FLASHING BEACONS



DETAIL "A"



SEC. A-A

* HOLES TO BE LOCATED TO OUTSIDE OF SIGN

DETAILS OF HOLES REQUIRED
FOR MOUNTING BEACONS

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6745355	REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS	EACH	5	
2	2401-6745910	REMOVAL OF SIGN	EACH	6	
3	2402-2720000	EXCAVATION, CLASS 20	CY	52	
4	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	11.5	
5	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	1,120	
6	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN	EACH	6	
7	2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0"	EACH	13	
8	2524-9281426	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26	LF	260.8	
9	2524-9380001	TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANEL	SF	460	
10	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
11	2528-8445110	TRAFFIC CONTROL	LS	1.00	
12	2533-4980005	MOBILIZATION	LS	1.00	
13	2599-9999005	ROADSIDE DMS, INSTALL	EACH	1	
14	2599-9999005	STEEL ROADSIDE DMS SIGN SUPPORT	EACH	1	

STANDARD ROAD PLANS

105-4
10-16-07

The following Standard Road Plans shall be considered applicable to construction work on this project.

Number	Date	Title
SI-102	10-20-09	Locations - Type 'B' Signs
SI-113	04-20-10	Support Structures - Steel Breakaway Posts
SI-121	04-20-10	Fabrication - Sign Legend Components
SI-123	10-20-09	Fabrication - Type 'B' Signs
SI-132	04-20-10	Installation - Type 'B' Signs
RM-42	04-20-10	Precast Handhole
TC-1	10-17-06	Work Not Affecting Traffic
TC-402	04-20-10	Shoulder Closure (Multi-Lane)

TRAFFIC CONTROL

108-23
04-04-89

I-35

Two lanes of traffic shall be maintained at all times in each direction.

US 18

Two lanes of traffic shall be maintained at all times in each direction.

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6745355	REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS Refer to Tabulation 190-62 and SIGN-NOTE RF. METHOD OF MEASUREMENT: The Engineer will count each concrete footing for highway sign removed. BASIS OF PAYMENT: For each concrete footing for highway sign removed, the Contractor shall be paid the contract unit price.
2	2401-6745910	REMOVAL OF SIGN Refer to Tabulation 190-62. The Contractor shall remove each sign and the hardware used to secure the sign to another sign, posts, or sign support structure. For signs mounted directly to posts, removal of the sign shall include removal of the posts. Posts may be either wood posts or steel breakaway sign posts. The removal of concrete footings for steel breakaway sign posts will be measured and paid for separately. Holes remaining from the removal of wood posts shall be backfilled with suitable earth to the original level or to the natural ground surface in accordance with Article 2402.09 of the Standard Specifications. All steel posts removed shall become the property of the Contractor. Unless otherwise noted, wood posts removed shall remain the property of DOT. The Contractor shall deliver the wood posts to a DOT storage area within 50 miles, as designated by the Engineer. The Contractor shall remove the sign and transport it to a DOT storage area within 50 miles, as designated by the Engineer. METHOD OF MEASUREMENT: The Engineer will count each sign removed. BASIS OF PAYMENT: For each sign removed, the Contractor shall be paid the contract unit price.
3	2402-2720000	EXCAVATION, CLASS 20 Refer to Tabulation 192-1.
4	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) Refer to Tabulation 192-1 and "V" sheets for details.
5	2404-7775005	REINFORCING STEEL, EPOXY COATED Refer to Tabulation 192-1 and "V" sheets for details.
6	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN Refer to Tabulations 190-50 and 190-62. The Contractor shall remove each sign and the hardware used to secure the sign to another sign, posts, or sign support structure. For signs mounted directly to posts, removal of the sign shall include removal of the posts. Posts may be either wood posts or steel breakaway sign posts. The removal of concrete footings for steel breakaway sign posts will be measured and paid for separately. Holes remaining from the removal of wood posts shall be backfilled with suitable earth to the original level or to the natural ground surface in accordance with Article 2402.09 of the Standard Specifications. All steel posts removed shall become the property of the Contractor. Unless otherwise noted, wood posts removed shall remain the property of DOT. The Contractor shall deliver the wood posts to a DOT storage area within 50 miles, as designated by the Engineer. **The existing sign shall be removed and stored. The Contractor shall remove the sign and transport it to a DOT storage area within 50 miles, as designated by the Engineer. The Contractor shall transport the sign back to the job site when ready for reinstallation. The Contractor shall furnish all necessary hardware to install the signs. When the new installation is similar to the original installation, unless otherwise noted, the existing hardware may be used to reinstall the sign. Signs damaged by the Contractor's activities shall be replaced at the Contractor's expense. Replacement materials shall be new. The DOT will furnish all details necessary for fabrication of the replacement materials. METHOD OF MEASUREMENT: The Engineer will count each sign removed and reinstalled. BASIS OF PAYMENT: For each sign removed and reinstalled, the Contractor shall be paid the contract unit price.

ESTIMATE OF QUANTITIES, ESTIMATE REFERENCE INFORMATION TRAFFIC CONTROL PLAN, AND STANDARD ROAD PLANS

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
7	2524-9081275	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6"
8	2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0"
9	2524-9281210	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 8 X 21
10	2524-9281426	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26 Refer to Tabulation 190-50 for details.
11	2524-9380001	TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANEL Refer to Tabulation 190-50.
12	2526-8285000	CONSTRUCTION SURVEY - -
13	2528-8445110	TRAFFIC CONTROL Refer to Tabulation 108-23.
14	2533-4980005	MOBILIZATION - -
15	2599-9999005	ROADSIDE DMS, INSTALL Refer to Tabulation 192-1 and "V" sheets. Work shall consist of furnishing all labor, equipment, and materials to construct and dynamic message sign (DMS), generally including, but not limited to: - attachment of the DMS to the support structure - construction of the ground cabinet footing - installation of an RM-38 junction box - installation of the conduit between the sign support structure footing and the ground cabinet footing - installation of the ground cabinet - transport DMS and associated appurtenances from storage area - remove existing 3' "Z" brackets on back of signs and replace with DOT provided 5" "Z" brackets The Roadside DMS vendor is Skyline Products, Inc. of Colorado Springs, Colorado. The following items will be provided by the DOT or the DMS vendor: DMS, DMS-to-sign support structure attachment hardware, and ground cabinet. The Contractor shall assume full responsibility for the DOT furnished materials prior to accessing them. This assumption of responsibility shall be documented with an itemized invoice clearly identifying each item and shall be signed and dated by the Contractor and the Engineer. Lacking a signed invoice, the default date of assumption of responsibility for these materials shall be the date the contract between the DOT and the Contractor is signed. Upon the assumption of responsibility for any and all materials, the Contractor shall be wholly liable for safe handling, storage, and installation of the equipment. Any damaged equipment shall be replaced at the Contractor's expense, without additional compensation. The DMS's and related equipment are stored in the Iowa DOT Maintenance Facility in Mason City, IA. METHOD OF MEASUREMENT: The Engineer will count the number of Roadside DMS signs installed. BASIS OF PAYMENT: The Contractor shall be paid the contract unit price for each Roadside DMS sign installed. This payment shall be full compensation for furnishing all material, equipment (except as noted above) and labor and for the performance of all work necessary, including transport of all provided materials from their present location, to provide the DMS installation.
16	2599-9999005	STEEL ROADSIDE DMS SIGN SUPPORT For the fabrication and installation of steel sign supports. Refer to the V sheets for dimensions and details. These items shall be constructed as per section 2423.

01-20-84 204-2

All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

04-15-08 213-1

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project.

It shall be the contractor's responsibility to ensure that areas (including haul roads) selected for waste or disposal not impact 1) culturally sensitive sites or graves or 2) wetlands or "Waters of the U.S.", including streams or stream banks below the "ordinary high water mark", without an approved U.S. Army Corps of Engineers Section 404 Permit.

No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans.

06-22-84 213-3

All borrow areas, stockpile areas, haul roads and areas used for equipment on this project will require subsoil tillage to an average depth of 16 inches to 20 inches prior to placement of topsoil and/or stabilizing crop seeding. Such tillage shall be accomplished on maximum of three foot centers and at right angles to the finished slope of the borrow.

Equipment used to accomplish the tillage shall be equipped with an arrowhead-type shoe so as to provide lateral displacement and limit the movement of the subsoil to the surface. It shall be approved by the engineer for the use intended. This work will be considered incidental to other work on the project and no payment will be allowed.

It is intended that following subsoil tillage, the area remains in a "loosened" condition. Additional compaction or the operation of heavy equipment, other than required for topsoil placement and shaping shall not be allowed on areas which have received subsoil tillage.

04-15-08 232-3A

EROSION CONTROL: (Rural Seeding)

Following completion of work in a disturbed area, the area shall be seeded, fertilized, and mulched as follows:

SEEDING:

3 lbs. of Fescue or Fawn per 1000 sq. ft.

FERTILIZER:

17 lbs. of 13-13-13 (or equivalent) commercial fertilizer per 1000 sq. ft.

MULCH:

70 lbs. of dry cereal straw per 1000 sq. ft. All mulch shall be consolidated into the soil with a mulch stabilizer.

The preparation of the seedbed and the furnishing and application of seed, fertilizer, and mulch shall be considered incidental to mobilization and no extra compensation will be allowed.

01-20-84 232-5

The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service area(s) will be subject to the approval of the resident engineer.

06-07-94 232-8

The top six (6) inches of the disturbed areas shall be free of rock and debris and shall be suitable for the establishment of vegetation, subject to the approval of the Engineer.

04-03-01 203-2

During construction of this project, the contractor will be required to coordinate his operations with those of other contractors working within the same area. Other work in progress during the same period of the time will include construction of the following projects:

Project	Type of Work

ESTIMATE REFERENCE INFORAMTION, AND STANDARD NOTATIONS

SIGNING NOTES

SIGN-NOTE 06-26-01

GENERAL:

The exact location of installation for any item is subject to approval by the Engineer.

Before excavation, the Contractor shall check for the locations of utilities, drainage structures and other facilities in the construction area. Any damage to such facilities due to the Contractor's activities shall be repaired at his expense.

During construction of this project the Contractor will be required to coordinate his operations with those of other Contractors working within the same area.

The following tolerances will be allowed on all signs:

Accumulation error of not greater than +/- 0.50" per line of copy, not greater than +/- 0.50" for spacing between lines of copy, and the margin between lines of copy and the inside edge of the sign border.

The following tolerances will be allowed on each letter or numeral: (The measurements will be made to the nearest 1/8".)

nominal height	variation in height	variation in width
4" thru 12"	-1/8" to +3/8"	-1/4" to +1/4"
over 12"	-1/8" to +3/8"	-3/8" to +3/8"

Type B signs are separated into two categories:
Major Guide Signs, and
Minor Guide Signs

Major Guide Signs include the advance and exit direction guide signs for an interchange or intersection.

Minor Guide Signs include all other guide signs such as next exits signs, supplemental guide signs, logo signs, exit gore signs, post-interchange mileage signs, ramp destination signs, and ramp logo signs for an interchange; and destination signs along sideroads.

Type A signs are not separated into categories, but special consideration should be given to regulatory signs.

Existing Type B signs shall remain in place until the new replacement signs are installed. If construction activities require the removal of a sign prior to installation of the replacement sign, the existing sign may be relocated to temporary posts, or a temporary plywood sign may be installed to replace the existing sign.

Existing non-regulatory Type A signs are NOT required to remain in place until installation of a replacement sign. Existing regulatory Type A signs, particulary Stop signs, should not be removed until the replacement sign is installed. This guideline may not apply if the traffic control plans have sufficient temporary signing.

During the replacement or modification of signs, no more than one of the major guide sign for each direction of travel at an interchange shall be out of service at any one time. No major guide sign shall be out of service for more than 8 hours. Minor guide signs shall not be out of service for more than 24 hours.

Existing signs and posts shall be removed within 24 hours following the installation of a new replacement sign.

In locations the plan indicates a new sign and posts to be installed at the same station location and offset as an existing sign, the new posts will be installed at a minimum of either 5 ft ahead or behind the existing sign installation. Whenever posts for a replacement sign are erected directly in front of an existing sign, the new replacement sign shall be installed and the existing sign installation shall be removed within 24 hours of the time that the new posts are erected.

Where signs are located behind guardrail, the near edge of the sign shall be a minimum of 3 ft behind the guardrail posts. The Engineer may approve reducing this distance to a minimum of 1 ft where field conditions warrant.

SIGNING NOTES

SIGN-NOTE 06-26-01

Unless otherwise noted, auxiliary panels such as exit number panels shall remain or be reattached to the sign using the existing mounting hardware. When replacing an existing logo sign with a new logo sign, the business logo panel(s) will be removed from the existing sign and attached to the new sign as directed by the Engineer. Care should be taken to prevent damage to the auxiliary or logo panels when removing and reattaching them. This work shall be considered incidental and no separate payment will be made.

In the location columns of Tabulation 190-50, the following symbols are used:
(R) = Ramp
(X) = Crossroad/Intersecting Road at Interchange
(M) = Metric Station Number
(L) = Left Side of Roadway

The following notes shall apply to the corresponding sign installations shown on the plan sheets and listed in the tabulations.

IB INSTALL NEW TYPE B SIGN
IA INSTALL NEW TYPE A SIGN

The Contractor shall install new signs at the locations identified in the plans.

For installation of new signs on existing posts:

- if the new sign is taller than the existing sign, the Contractor shall furnish the necessary hardware to extend the sign above the posts. Refer to Standard Road Plan SI-119.

- if the new sign is shorter that the existing sign,

for wood posts, the Contractor shall install the sign at the proper height and cut off the excess post length.

for steel posts, the Contractor shall install the sign at the top of the posts.

For installation of new signs on an existing sign support structure, refer to note (L).

All costs incurred for mounting hardware, extension of signs above existing posts, and cutting off wood posts shall be included in the price bid for Type A or Type B signs.

MS MODIFY EXISTING SIGN ASSEMBLY

The Contractor shall modify the copy on the existing sign as shown in the plan.

Existing copy which is removed shall delivered to a DOT storage area within 50 mi, as designated by the Engineer.

The Contractor shall install the new copy as needed to make the sign modifications.

All costs for copy removal, delivery to a DOT storage area, and installation of new copy shall be included in the price bid for sign modification.

MB INSTALL SPECIAL MOUNTING BRACKET

Special mounting brackets shall be installed at the locations identified in the plans. Refer to the tabulations TYPE-A, MILEPOST, and/or MNT-BRK details.

SIGNING NOTES

SIGN-NOTE 06-26-01

PW INSTALL NEW WOOD POSTS
PB INSTALL NEW BREAKAWAY STEEL POSTS AND FOOTINGS

New wood posts or breakaway steel posts and footings shall be installed at the locations indicated in the plans. Refer to Tabulation 190-50 for post size and footing information.

If note (RR) accompanies either (PW) or (PB), an existing sign will be installed on the new posts.

SS INSTALL SIGN ON NEW SUPPORT STRUCTURE

A new overhead sign truss or cantilevered overhead sign support shall be installed at locations indicated in plans. Sign shall be installed on support. Refer to Tabulation 190-50 and "V" sheets for details.

REMOVAL OF SIGNS
RA REMOVE EXISTING TYPE A SIGN ASSEMBLY
RB REMOVE EXISTING TYPE B SIGN ASSEMBLY

A Type A Sign Assembly consists of
- one or more signs,
- installed on one or more wood posts,
- either directly mounted to the post, or mounted to the post with special sign mounting brackets.

A Type B Sign Assembly consists of
- the main sign,
- all auxiliary signs and brackets, and
- the wood or steel posts.

Unless stated otherwise in the plans, all posts shall be removed with the signs and brackets.

The Contractor shall remove each sign assembly identified in the plans. Steel posts removed shall become the property of the Contractor. All other materials removed shall remain the property of the DOT.

Each sign assembly removed shall be disassembled before delivery to the DOT. For Type A sign assemblies, the Contractor shall unbolt all signs, special mounting brackets, and posts from each other. For Type B sign assemblies, the Contractor shall unbolt all extruded aluminum panels, brackets, and posts from each other. Care should be taken not to damage the disassembled materials.

Holes remaining from the removal of wood posts shall be backfilled and restored to the normal surrounding conditions.

The Contractor shall deliver the removed signs, special sign mounting brackets, extruded aluminum panels, and wood posts to a DOT storage area within 50 mi, as designated by the Engineer.

The concrete footings for steel posts are not part of the sign assembly.

RF REMOVE EXISTING CONCRETE FOOTING FOR STEEL POST

Existing concrete footings shall be removed to a depth of 1 ft below ground. The remaining holes shall be backfilled and restored to the normal surrounding conditions.

SIGNING NOTES

SIGN-NOTE 06-26-01

SIGN INSTALLATION QUALTIY CONTROL NOTES

Post lengths shall be field verified.

Sleight differences between the plan-indicated cross section and the actual field conditions may be encountered.

These variations should be resolved by localized grading and shaping. Material needed to meet the site requirements of SI-101 or SI-102 should be obtained from the footing excavation and/or the area immediately adjacent to the footing. Any reshaping work shall not substantially change the foreslopes or the drainage in the vicinity of the sign.

Significant differences between the plan-indicated cross section and the actual field conditions need to be resolved in the following manner:

The location shall be surveyed and the ground surface drawn on the cross section.

Each post length shall be recalculated and compared to the maximum allowable leg length. If all of the leg lengths are less than or equal to the maximum allowable leg length, then the proposed post design shall be utilized.
If any leg is greater than the maximum allowable leg length, then the crosssection with the actual ground surface drawn (including offsets and elevation from the survey shown) shall be submitted to the Engineer. The Engineer may forward this information to the design Engineer to complete a new post design.

The Contractor shall install the footings & stub posts, and posts in accordance with the following tolerances:

-the elevation difference from the edge of pavement to the bottom of the sign shall be ±6 inches the dimension shown.

-the elevation difference between the top of the highest post and the lowest post at a site shall be less than 2 inches.

The elevation difference between the stubs shall be the same as the elevation difference between the post lengths. The Contractor shall, upon request by the Engineer, submit documentation detailing the site field shots in order to verify site installation.

SIGNING NOTES

TABULATION OF MATERIALS FOR TYPE 'B' SIGNS

190-50
08-22-06

Refer to Standard Road Plan SI-102.

SIGN NUMBER					DIR OF TRAVEL	SIGN LOCATION		FAB INFO	SIGN WIDTH (ft)	SIGN HEIGHT (ft)	NEW AREA (SQ. ft)	WOOD POSTS 4X6			STEEL BREAKAWAY POSTS									INSTALLATION			SEE SIGNING NOTES	REMARKS
															W8x21				W12x26									
			ROAD ID									L	M	R	L	M	R	FOOTING 2'8"x7'6"	L	M_1	M_2	R	FOOTING 2'8"x9'	TYPE	DIM "X"	DIM "Y"		
RTE.	CO.	EXIT NO.	M,R,S	SEQ. NO.		M.P.	STATION					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(each)	(ft)	(ft)	(ft)	(ft)	(each)		(ft)	(ft)		
18	17	186	M	101A	W		202+11	new	14	2	28																IB	
18	17	186	M	101	W		202+11	new	14	8	112								31.9			29.2	2	1	30	7	IB/PB	
18	17	186	M	102A	W		210+16	new	11	2	22																IB	
18	17	186	M	102	W		210+16	new	11	6	66				27.0		25.1	2						1	30	7	IB/PB	
35	17	194	M	101A	S		888+85	new	14	2	28																IB	
35	17	194	M	101	S		888+85	new	14	8	112								31.9			29.2	2	1	30	7	IB/PB	
35	17	194	M	102A	S		905+90	new	11	2	22																IB	
35	17	194	M	102	S		905+90	new	11	6	66				27.0		25.1	2						1	30	7	IB/PB	
35	17	194	M	103	S		934+50	Existing	19	10									16.2	19.0		21.8	3	1	30	7	PB	Food Service sign relocated from Sta. 896+95
35	17	194	M	104	S		1028+90	Existing	13	10									18.6			21.8	2	1	30	7	PB	Attractions Service sign relocated from Sta. 970+00
									TOTALS		456				104.2			4	180.2				7					

* DIMENSIONS SHOWN ARE FOR ESTIMATING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD BEFORE DETAILING SHOP DRAWINGS.

TABULATION OF EXISTING SIGNS TO BE REMOVED OR REMOVED AND REINSTALLED

190-62
08-24-06

SIGN NUMBER OR DESCRIPTION	LOCATION STATION (approximate)	DIR OF TRAVEL	TYPE "A" SIGN ASSEMBLY (each) (RA)	TYPE "B" SIGN ASSEMBLY (each) (RB)	REMOVE & REINSTALL EXISTING SIGNS		CONCRETE FOOTING (each)	SUPPORT STRUCTURE & FOOTING (each) (RS)	APPLICABLE SIGNING NOTES	REMARKS
					TYPE "A" (each)	TYPE "B" (each)				
Temporary Road Closed	202+11	W	1						RA	
M1-G	202+11	W				1				Reinstall at 205+16
M1-F	205+16	W				1				Reinstall at 211+25
Vistor Information	210+16	W		1					RB	
Temporary Road Closed	210+16	W	1						RA	
M9-11A	212+75	W		1					RB	
Logo Sign	888+85	W				1	2		RR/RF	Reinstall at 896+95
Temporary Road Closed	888+85	W	1						RA	
Logo Sign	896+95	W				1			RR	Reinstall at 934+45
Logo Sign	905+90	W				1	3		RR/RF	Reinstall at 970+00
Temporary Road Closed	905+90	W	1						RA	
Logo Sign	970+00	W				1			RR	Reinstall at 1028+90
TOTALS			4	2		6	5			

TABULATION OF MATERIALS FOR STEEL ROADSIDE DMS SIGN SUPPORT

Refer to Site Installation Details on Sheet B.02, Sheet N.01 and "V" Sheets.

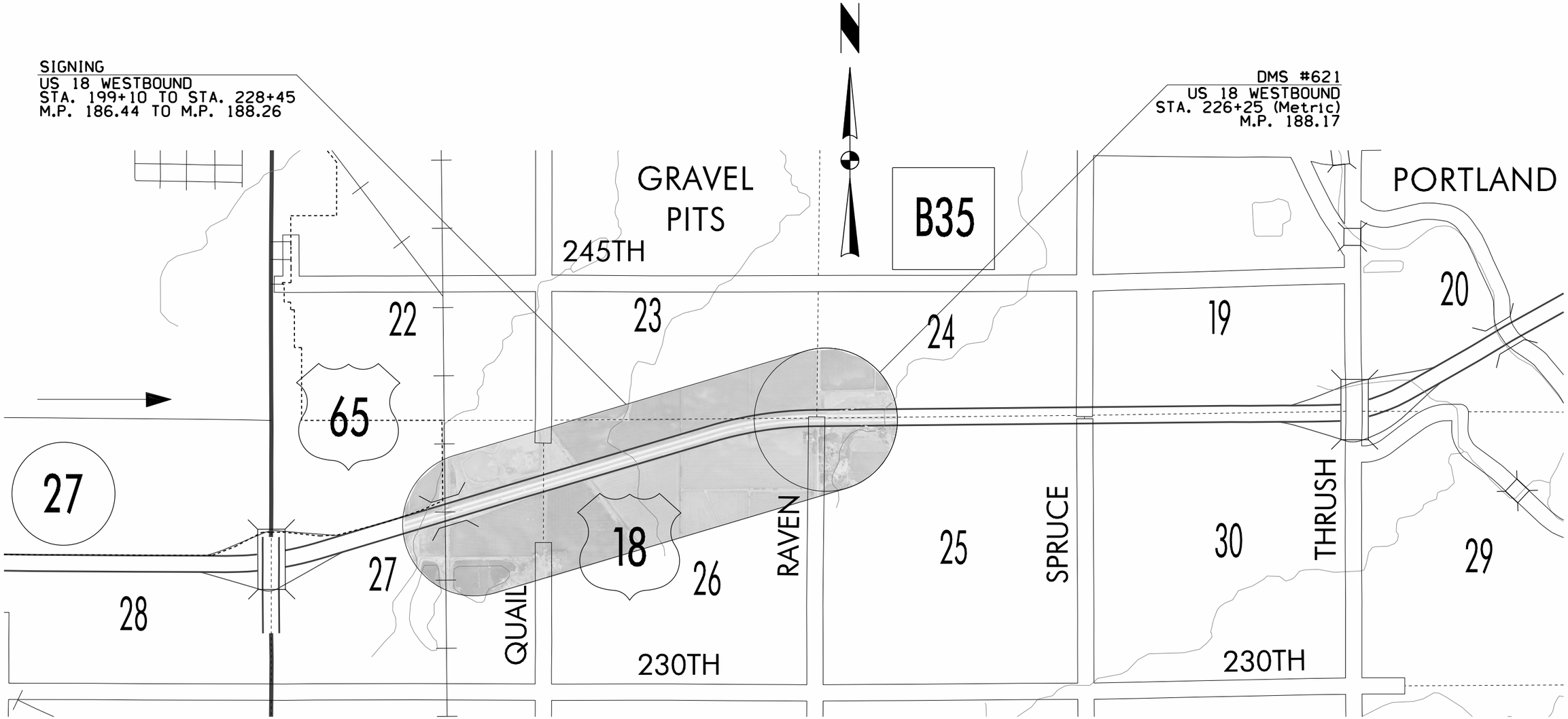
192-1
03-17-09

DMS NUMBER	LOCATION				HORIZONTAL OFFSET TO CENTER OF POST (Ft)	SKEW ANGLE (Degrees)	OFFSETS TO NEAR CORNERS OF FOOTING		LENGTH OF POST (Ft)	FOUNDATION QUANTITIES		
	ROUTE	STATION	MILEPOST	DIR OF TRAVEL			Y_1 (Ft)	Y_2 (Ft)		EXCAVATION (CLASS 20) (Cu Yd)	REINFORCING - EPOXY- COATED STEEL (Lb)	STRUCTURAL CONCRETE (Cu Yd)
621	US 18	226+25	188.17	WB	36.00	6	31.19	32.86	18.0	52	1120	11.5

SIGNING TABULATIONS

SIGNING
US 18 WESTBOUND
STA. 199+10 TO STA. 228+45
M.P. 186.44 TO M.P. 188.26

DMS #621
US 18 WESTBOUND
STA. 226+25 (Metric)
M.P. 188.17



LOCATION MAP SCALE
0 .2 .4 .6 .8 1.0
MILES

LOCATION MAP FOR US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.01

3/15/2010 pjense2 W:\Projects\0307601010\TrafEng\Signing\25-17-0185-146\170185146_n01.sht

PROPOSED ROAD CLOSED SIGN

MODIFY
EXISTING SIGN
(BY OTHERS)
STA 199+10

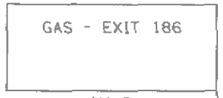
Temporary

18-17-186 M101A

18-17-186 M101

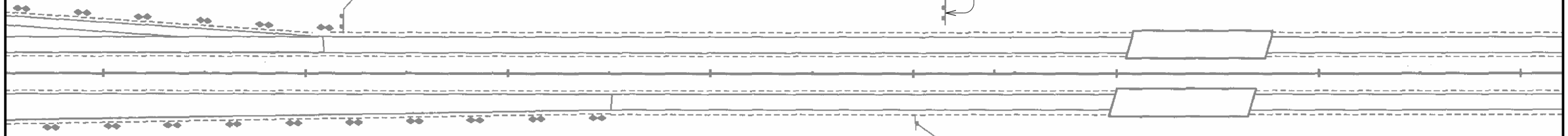
Install new posts

EXISTING SIGN
STA 202+11
Move to 205+16



M1-G
4571 x 3048

198 199 200 201 202 203 204 205



M3-2
600 x 300

M1-4
600 x 600

PROPOSED & EXISTING SIGN LAYOUT
US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.02

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RELOCATE EXISTING SIGN
From Sta 202+11
Use existing posts

DIESEL
GAS - EXIT 186
x x x

FOOD - EXIT 186

M1-F
3963 x 3048

EXISTING SIGN
STA 205+16
Move to 211+25

Union Pacific R.R.

203 204 205 206 207 208 209 210

EXISTING SIGN
STA 207+45

Sheffield
Hampton
EXIT 186

UAC

I 8 7
D10-3A
Sta. 208+11.448

PROPOSED ROAD CLOSED SIGN

Temporary

WHEN FLASHING
18 CLOSED
1/2 MILE

WHEN FLASHING
18 CLOSED
1/2 MILE

18-17-186 M102A
18-17-186 M102

Install new posts

EXISTING SIGN
STA 210+16

VISITOR INFO
EXIT 186

REMOVE

SPEED LIMIT 65
R2-1Y
1200 x 1500

I 8 7
D10-3A
Sta. 208+11.448

Nora Springs	12
Charles City	26

18-17-119A

PROPOSED & EXISTING SIGN LAYOUT
US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.03

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RELOCATE EXISTING LOGO SIGN
From Sta 205+16

FOOD - EXIT 186
x x
x x

Use existing posts

EXISTING SIGN
STA 212+75

HOSPITAL-EXIT 186

REMOVE

MODIFY
EXISTING SIGN
(BY OTHERS)
STA 215+24

H EXIT 186
BUSINESS
65 18
Downtown
Mason City
Rockwell
1 MILE
VISTIOR INFO

211 212 213 214 215 216 217 218

N

PROPOSED & EXISTING SIGN LAYOUT
US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.04

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EXISTING SIGN
STA 218+24

LODGING - EXIT 186

M1-L
3963 x 3048 UAC

EXISTING SIGN
STA 221+50

ATTRACTIONS - EXIT 186

x x
x x

UAC

EXISTING SIGN
STA 223+95

IOWA STATE PATROL
HELP LINE
1-800-525-5555
9-1-1 FOR EMERGENCIES

UAC

218 219 220 221 222 223 224 225

I 8 8
D10-3A
Sta.224+20.792

I 8 8
D10-3A
Sta.224+20.792

PROPOSED & EXISTING SIGN LAYOUT
US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.05	

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PROPOSED DYNAMIC
MESSAGE SIGN
STA 226+25

DMS #621

DMS

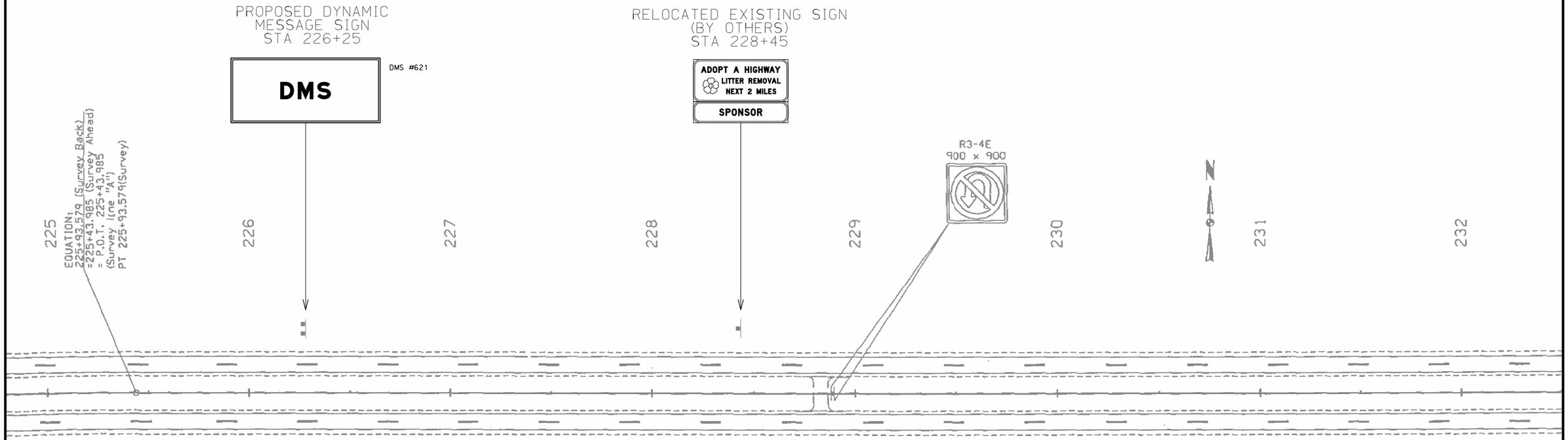
RELOCATED EXISTING SIGN
(BY OTHERS)
STA 228+45

ADOPT A HIGHWAY
LITTER REMOVAL
NEXT 2 MILES

SPONSOR

R3-4E
900 x 900

EQUATION:
225+93.529 (Survey Back)
=225+43.985 (Survey Ahead)
= P.O.T. 225+43.985
(Survey line "A")
PT 225+93.579(Survey)



PROPOSED & EXISTING SIGN LAYOUT
US 18

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.06

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SIGNING
I-35 SOUTHBOUND
STA. 888+85 TO STA. 1028+90
M.P. 194.35 TO M.P. 197.68

LOCATION MAP SCALE
0 .2 .4 .6 .8 1.0
MILES

LOCATION MAP FOR I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.07

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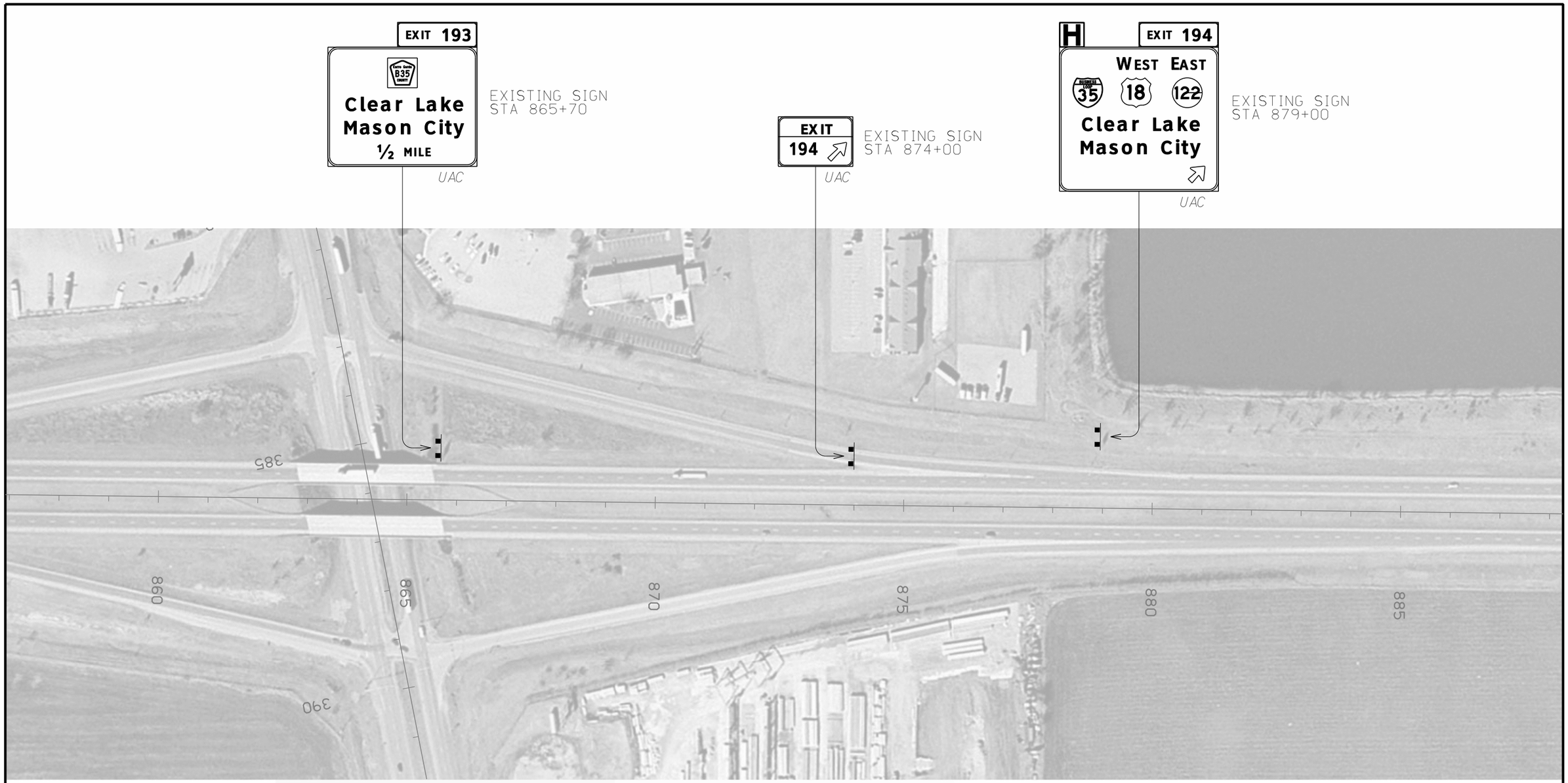

PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.08

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PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.09

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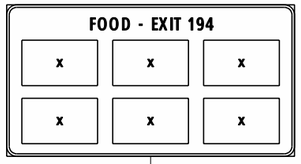
EXISTING SIGN
STA 926+15

UAC

RELOCATE EXISTING
LOGO SIGN
STA 934+50

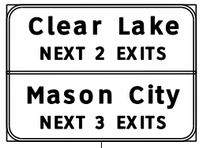
From Sta 896+95
Install new posts



35-17-194 M103

EXISTING SIGN
STA 932+30

UAC



UAC

EXISTING SIGN
STA 942+75

PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.10	

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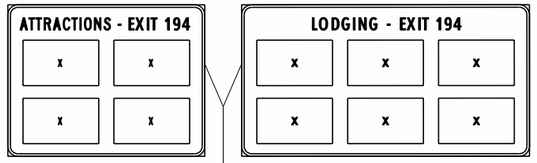
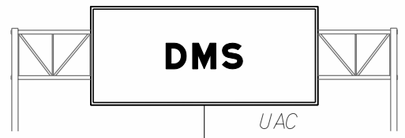
EXISTING SIGN
STA 965+00
UAC



EXISTING SIGN
STA 970+00
Move to 1028+90

RELOCATE
EXISTING LOGO
SIGN
From Sta 905+90

EXISTING DMS SIGN
STA 978+00



UAC

PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.11

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PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.12	

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PROPOSED & EXISTING SIGN LAYOUT
I-35

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER N.13

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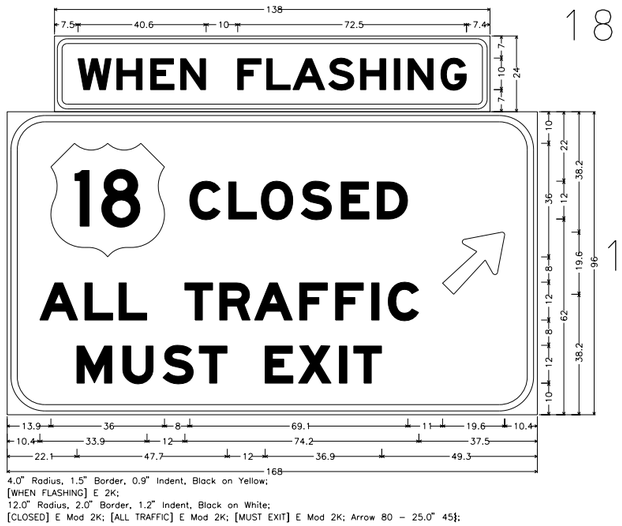
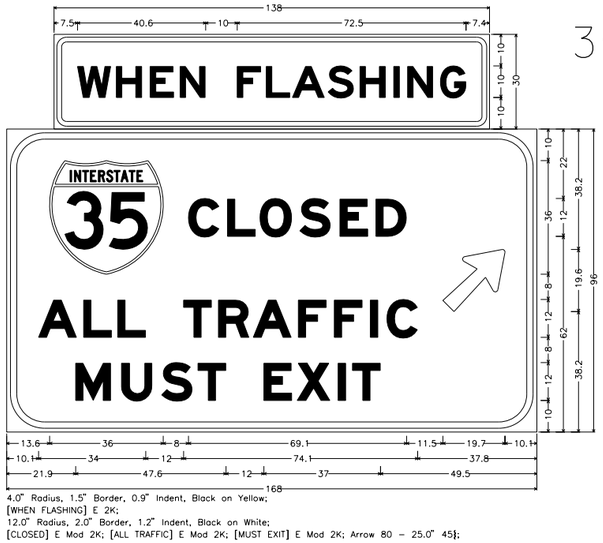
18-17-186 M101A



18-17-186 M101

4.0" Radius, 1.5" Border, 0.9" Indent, Black on Yellow;
[WHEN FLASHING] E 2K;
12.0" Radius, 2.0" Border, 1.2" Indent, Black on White;
[CLOSED] E Mod 2K; [ALL TRAFFIC] E Mod 2K; [MUST EXIT] E Mod 2K; Arrow 80 - 25.0" 45];

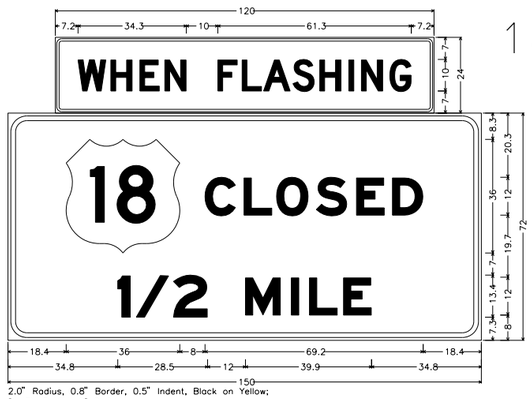
35-17-194 M101A



35-17-194 M101

4.0" Radius, 1.5" Border, 0.9" Indent, Black on Yellow;
[WHEN FLASHING] E 2K;
12.0" Radius, 2.0" Border, 1.2" Indent, Black on White;
[CLOSED] E Mod 2K; [ALL TRAFFIC] E Mod 2K; [MUST EXIT] E Mod 2K; Arrow 80 - 25.0" 45];

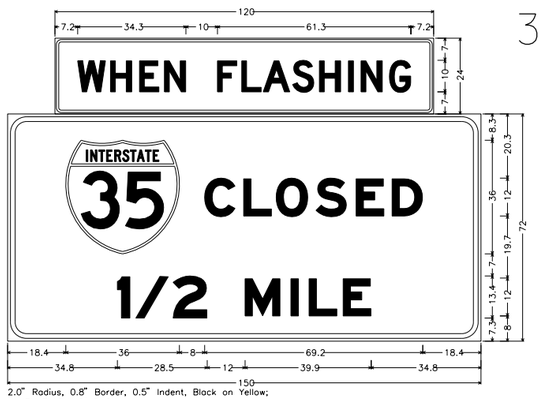
18-17-186 M102A



18-17-186 M102

2.0" Radius, 0.8" Border, 0.5" Indent, Black on Yellow;
[WHEN FLASHING] D 2K;
6.0" Radius, 1.5" Border, 0.9" Indent, Black on White;
[CLOSED] E Mod 2K; [1/2 MILE] E Mod 2K;

35-17-194 M102A



35-17-194 M102

2.0" Radius, 0.8" Border, 0.5" Indent, Black on Yellow;
[WHEN FLASHING] D 2K;
6.0" Radius, 1.5" Border, 0.9" Indent, Black on White;
[CLOSED] E Mod 2K; [1/2 MILE] E Mod 2K;

SIGNING DETAILS

ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON STEEL ROADSIDE D.M.S. SUPPORT.

1) THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE BASE PLATE NUTS WITHOUT PAUSE OR DELAY.

2) PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES MAY NOT BE USED.

3) BASE PLATE, ANCHOR RODS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.

4) APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS, AND WASHERS.

5) TIGHTEN TOP NUTS SO THEY FULLY CONTACT THE BASE PLATE. TIGHTEN LEVELING NUTS TO SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY THE FULL EFFORT AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.

6) TIGHTEN TOP NUTS TO SNUG TIGHT AS DESCRIBED FOR THE LEVELING NUTS.

7) MATCH-MARK THE TOP NUTS AND BASE PLATE USING PAINT, CRAYON, OR OTHER APPROVED MEANS TO PROVIDE A REFERENCE FOR DETERMINING THE RELATIVE ROTATION OF THE NUT AND BASE PLATE DURING TIGHTENING. USING A STRIKING OR HYDRAULIC WRENCH, FURTHER TIGHTEN THE TOP NUTS IN TWO PASSES AS LISTED IN THE FOLLOWING TABLE. USE A SEQUENCE OF TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL NUTS IN THAT PASS HAVE BEEN TURNED. DO NOT ROTATE THE LEVELING NUT DURING THE TOP NUT TIGHTENING.

ANCHOR BOLT SIZE	FIRST PASS	SECOND PASS	TOTAL ROTATION
LESS THAN OR EQUAL TO $1\frac{1}{2}\Phi$"	1/6 TURN	1/6 TURN	1/3 TURN
LESS THAN OR EQUAL TO $1\frac{1}{2}\Phi$"	1/6 TURN	1/6 TURN	1/3 TURN

8) LUBRICATE, PLACE AND TIGHTEN THE JAM NUTS TO SNUG TIGHT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 WITH CURRENT INTERIMS.

CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

STAINLESS STEEL BOLTING NOTE:

UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL BOLTS AND U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS.

STEEL NOTES:

ALL STEEL SHAPES, BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. THE GALVANIZED METAL BAR GRATING INCLUDING BEARING BAR, CROSS BARS AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S OR API 5L GRADE B. ALL ROUND HSS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A 500 GRADE B.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING.

ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS IM 453.08.

STEEL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS SPECIFICATIONS D1.1, STRUCTURAL WELDING CODE-STEEL.

ULTRASONIC TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE WELDS.

THE $\frac{3}{4}\Phi$ A325 GALVANIZED BOLTS SHALL BE TENSIONED BY TURN OF THE NUT METHOD.

GENERAL NOTES:

ALL D.M.S. SUPPORTS ARE DESIGNED FOR 40.2 lb/ft^2 WIND PRESSURE ON MEMBERS AND SIGN PANELS.

ALL PIPES, SHAPES, AND PLATES SHALL BE STRUCTURAL STEEL COMPLYING WITH THE ASTM SPECIFICATIONS NOTED.

SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

CLEAR DISTANCE FROM FACE OF CONCRETE TO THE NEAREST REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE SHOWN.

THE ANCHOR BOLT ASSEMBLY SHALL BE CENTERED AT THE CENTER OF SHAFT AND SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

THE FOOTING SHALL BE BACKFILLED PRIOR TO ERECTING SIGN SUPPORT.

DESIGN ALLOWABLE SOIL BEARING IS 1.0 TON PER SQ. FT.

ALL REINFORCING TO BE GRADE 60.

ALL CONCRETE TO BE CLASS "C" STRUCTURAL CONCRETE.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

FOUNDATIONS AND ANCHOR BOLTS:

1) THE ELEVATION AT THE OF THE TOP OF THE FOUNDATION SHALL BE WITHIN 1 INCH OF PLAN ELEVATION.

2) ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY BY TEMPLATE OR OTHER POSITIVE MEANS, WITH CENTERS OF ADJACENT ANCHOR BOLT GROUPS WITHIN $\frac{3}{16}$ INCH OF THE CORRECT DISTANCE APART.

3) ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

4) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

5) WELDING OR BENDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED STEEL STRUCTURE:

1) THE SUPPORT COLUMN SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.

2) HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN $\frac{1}{16}$ INCH PER FOOT OF HORIZONTAL.

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — James R. Hauber 18418 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

James Hauber 2-23-2010
Signature Date

James R. Hauber
Printed or Typed Name

My license renewal date is December 31, 2010

Pages or sheets covered by this seal: V.1 THRU V.5

DESIGN FOR

STEEL ROADSIDE D.M.S. SUPPORT

GENERAL NOTES

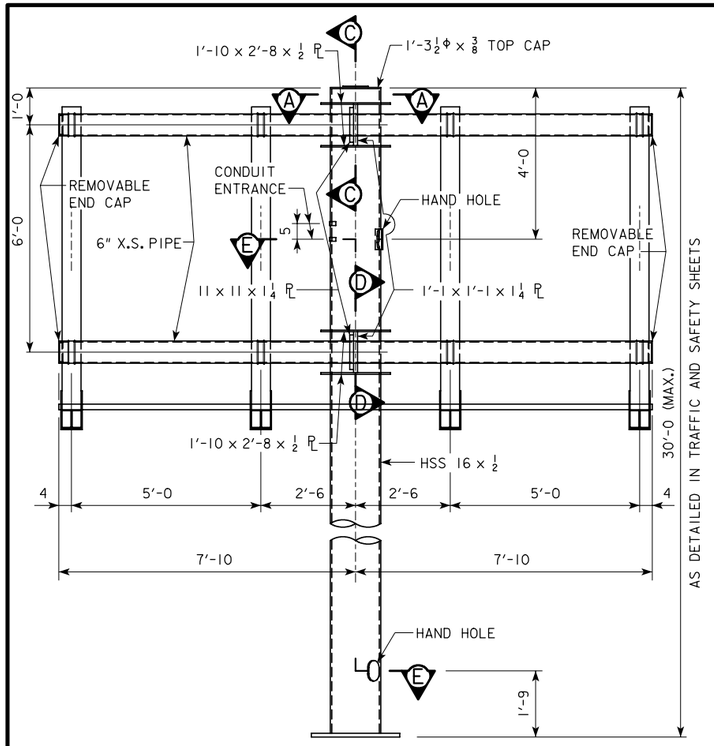
STA. 226+25.00 FEBRUARY, 2010

CERRO GORDO COUNTY

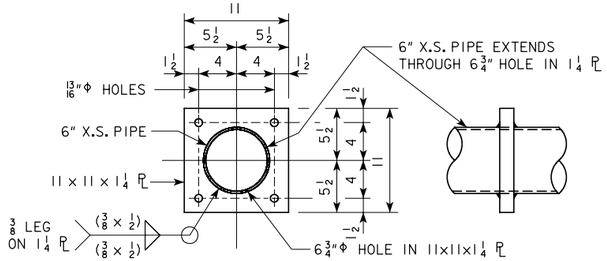
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 5 FILE NO. 30500 DESIGN NO. 210

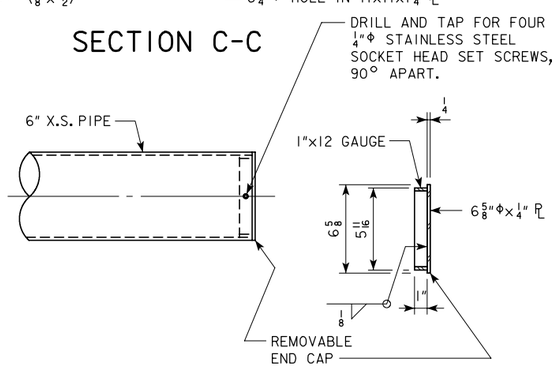
DESIGN TEAM JRH / JDC / HLA	ROADSIDE DMS SUPPORT	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER V.1



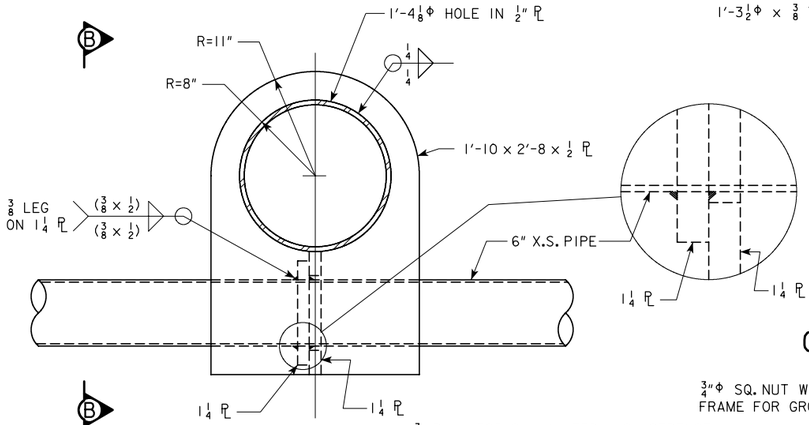
ELEVATION



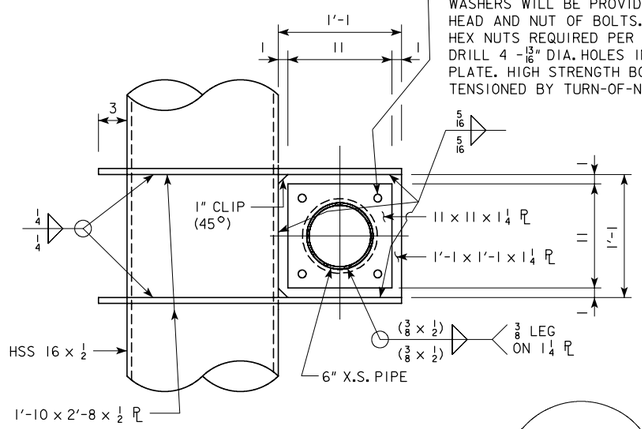
SECTION C-C



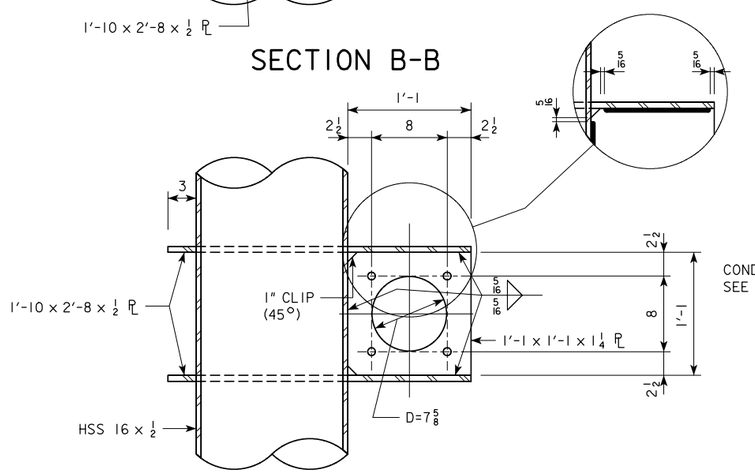
END CAP DETAIL



SECTION A-A



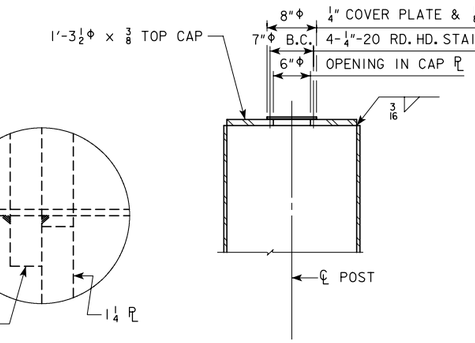
SECTION B-B



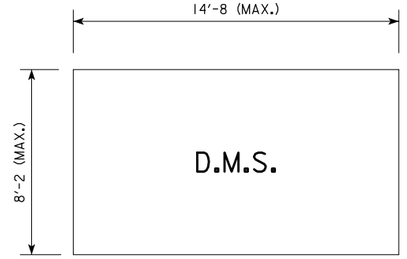
SECTION D-D

(6" X.S. PIPE NOT SHOWN)

¾" DIA. A325 GALVANIZED HIGH STRENGTH BOLTS, MEETING THE REQUIREMENTS OF ARTICLE 2408.03,S. 8 BOLTS REQUIRED PER SUPPORT STRUCTURE, 16 HARDENED WASHERS REQUIRED PER SUPPORT STRUCTURE. HARDENED WASHERS WILL BE PROVIDED UNDER BOTH HEAD AND NUT OF BOLTS. 8 - ¾" DIA. HEAVY HEX NUTS REQUIRED PER SUPPORT STRUCTURE. DRILL 4 - 15/16" DIA. HOLES IN EACH 1¼" VERTICAL PLATE. HIGH STRENGTH BOLTS SHALL BE TENSIONED BY TURN-OF-NUT METHOD.

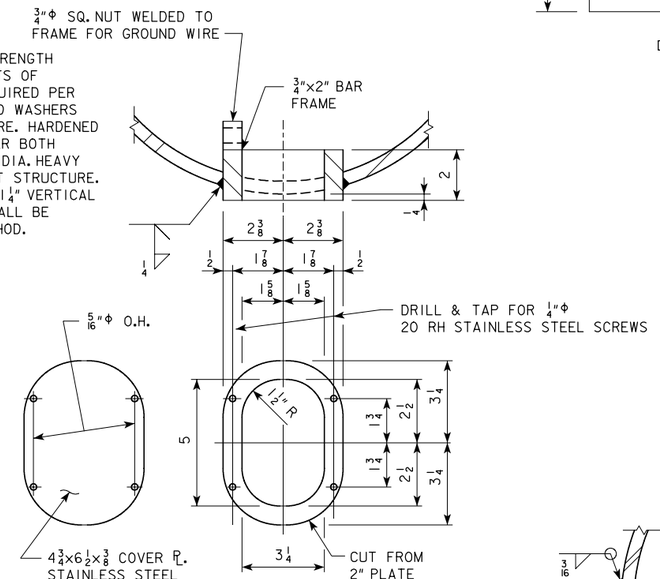


COVER PLATE DETAIL

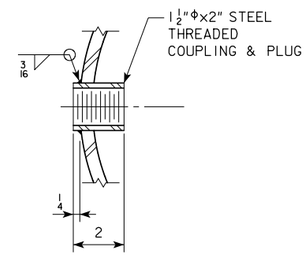


D.M.S. LIMITS FOR SIGN SUPPORT DESIGN.

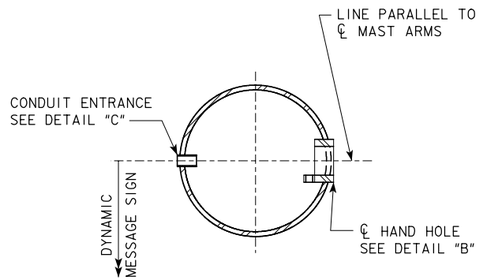
1700 LBS. MAX.
1'-4 MAX. DEPTH



DETAIL "B"



DETAIL "C"



SECTION E-E

DESIGN FOR

STEEL ROADSIDE D.M.S. SUPPORT

SIGN SUPPORT DETAILS

STA. 226+25.00 FEBRUARY, 2010

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 5 FILE NO. 30500 DESIGN NO. 210

DESIGN TEAM JRH / JDC / HLA	CANTILEVER SIGN TRUSS	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER V.2

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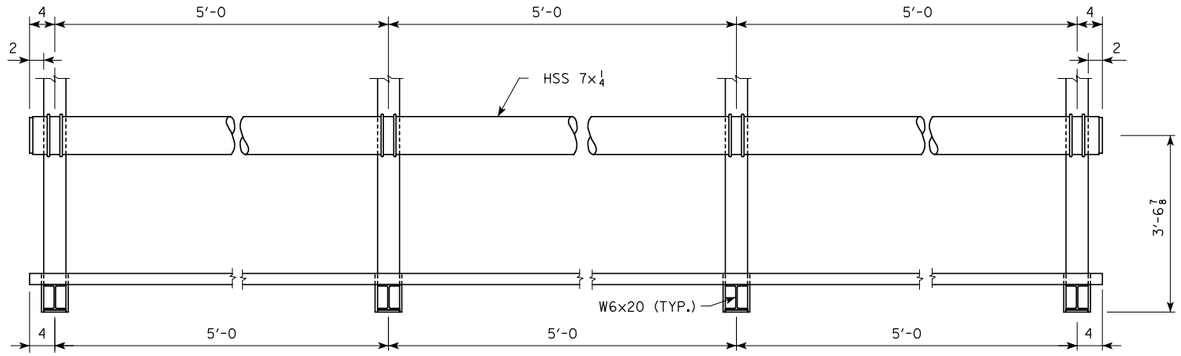
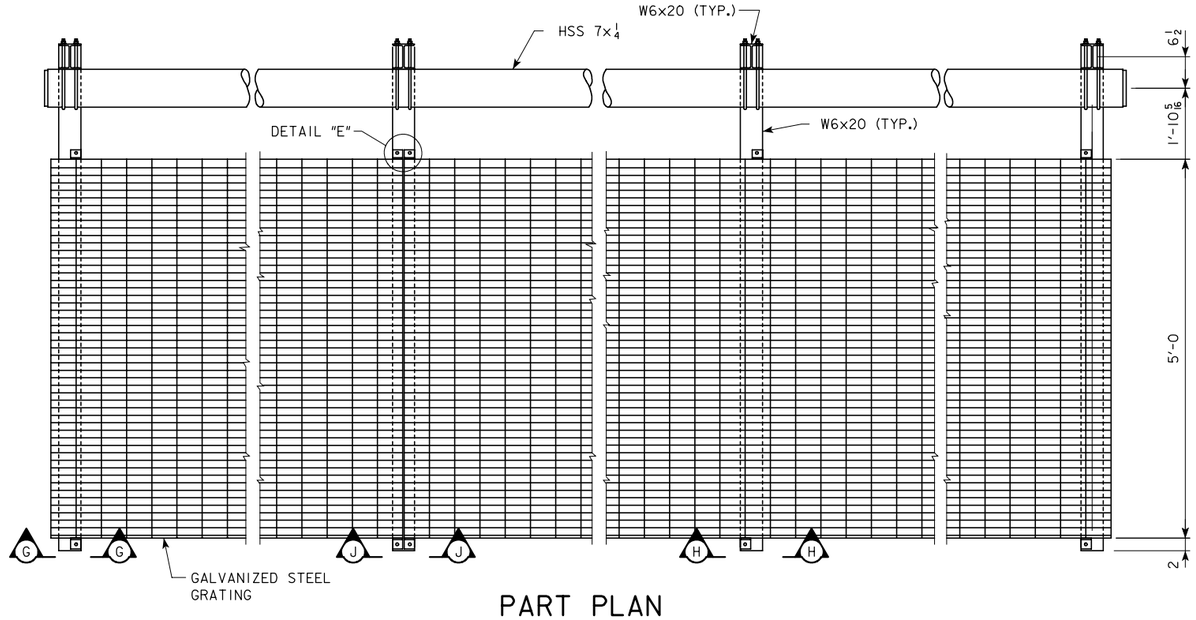
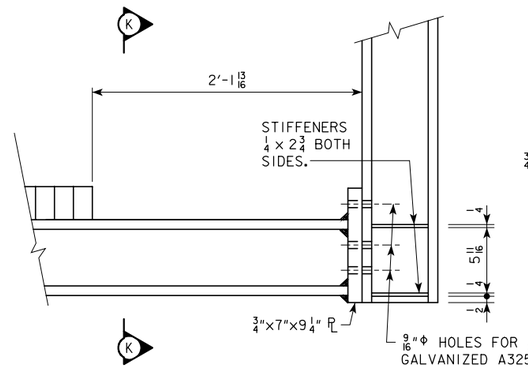


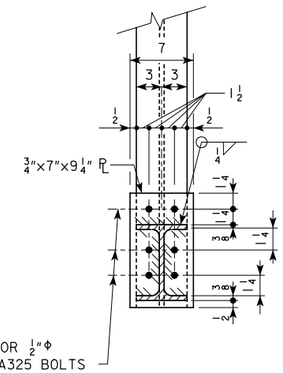
PART ELEVATION



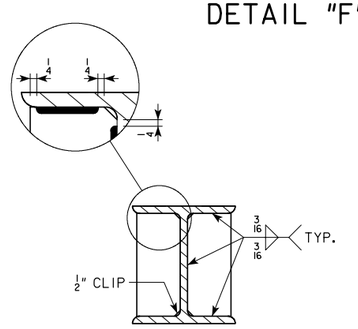
PART PLAN



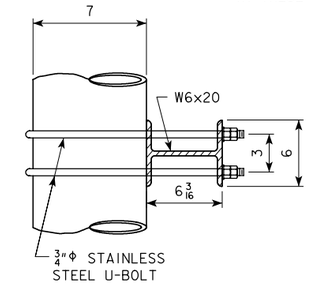
DETAIL "F"



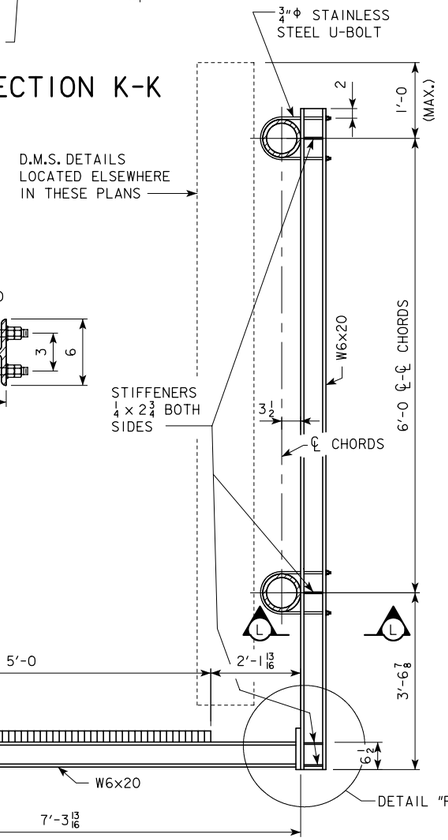
SECTION K-K



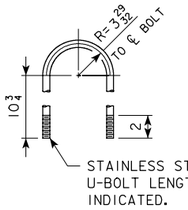
TYPICAL STIFFENER DETAIL



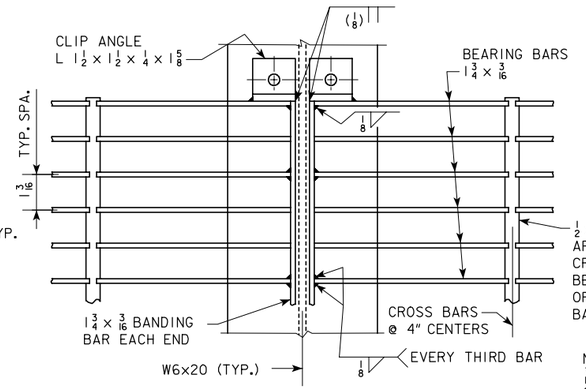
SECTION L-L



TYPICAL WORK PLATFORM SECTION

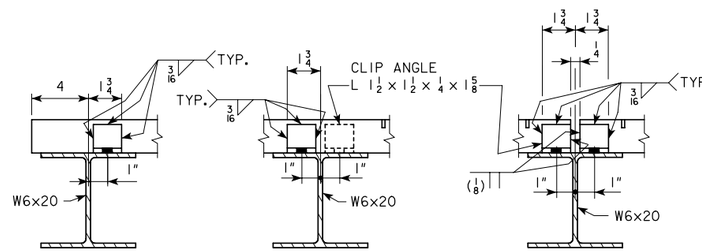


STAINLESS STEEL U-BOLT DETAIL



DETAIL "E"

NOTE:
7/16"Φ HOLE IN CLIP ANGLE AND 7/16"Φ HOLE IN W6x20 FOR 3/8"Φ GALVANIZED A325 BOLT. ADJUST CLIP SO GRATING BEARS ON BEAM.



DESIGN FOR
STEEL ROADSIDE D.M.S. SUPPORT

WORK PLATFORM DETAILS

STA. 226+25.00 FEBRUARY, 2010

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 5 FILE NO. 30500 DESIGN NO. 210

DESIGN TEAM JRH / JDC / HLA | CERRO GORDO COUNTY | PROJECT NUMBER ITS-018-5(146)--25-17 | SHEET NUMBER V.3

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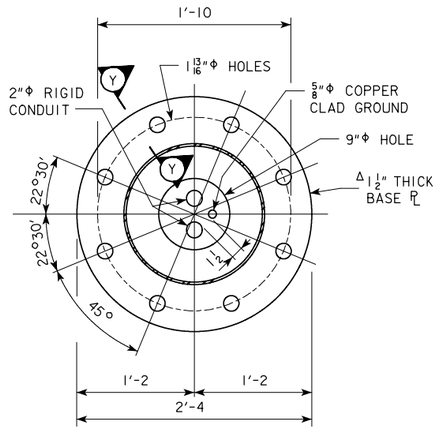
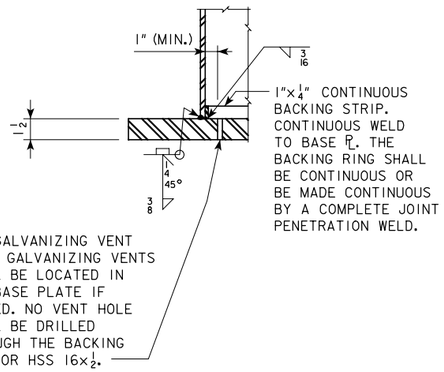


SECTION X-X



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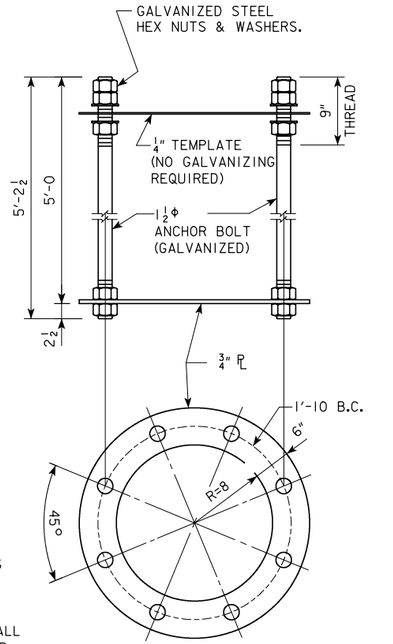
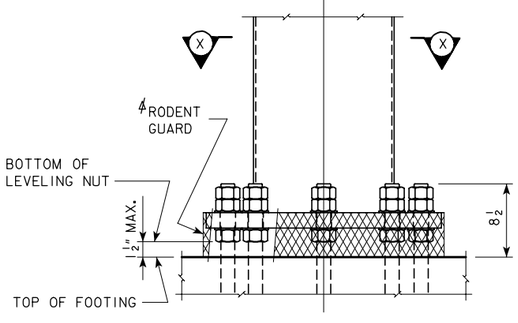


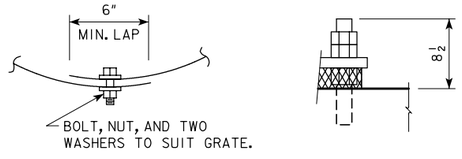
ANCHOR BOLT ASSEMBLY

(ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS I.M. 453.08.)



POST BASE DETAIL

RODENT GUARD ALTERNATE



RODENT GUARD CLOSURE DETAIL

4 A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

AS AN ALTERNATE STAINLESS STEEL STANDARD GRADE WIRE CLOTH, 1/4" MAXIMUM OPENING WITH A MINIMUM WIRE DIAMETER OF AWG NO. 16 WITH A MINIMUM 2" LAP. SECURE TO BASE PLATE AFTER ERECTION WITH 3/4" STAINLESS STEEL BANDING. THE RODENT GUARD SHALL NOT EXTEND ABOVE THE TOP OF THE BASE PLATE.

DESIGN FOR

STEEL ROADSIDE D.M.S. SUPPORT

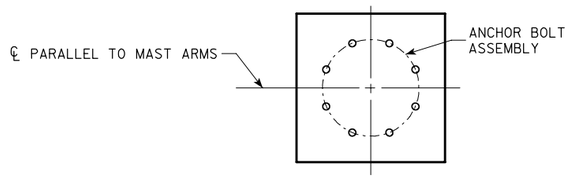
SIGN SUPPORT DETAILS

STA. 226+25.00 FEBRUARY, 2010

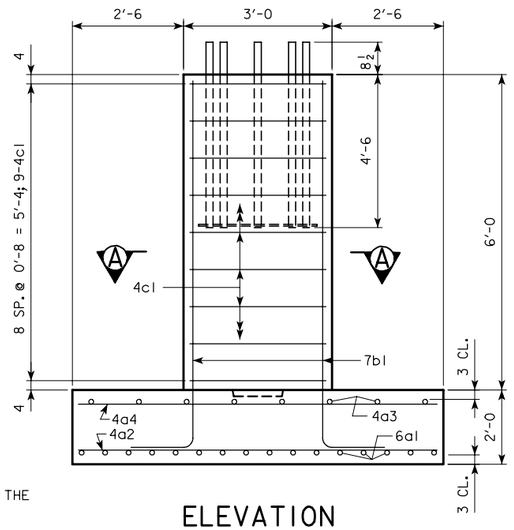
CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 5 FILE NO. 30500 DESIGN NO. 210

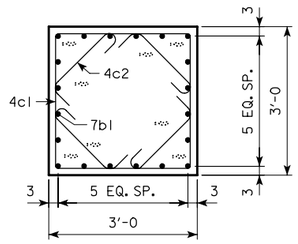


TOP VIEW

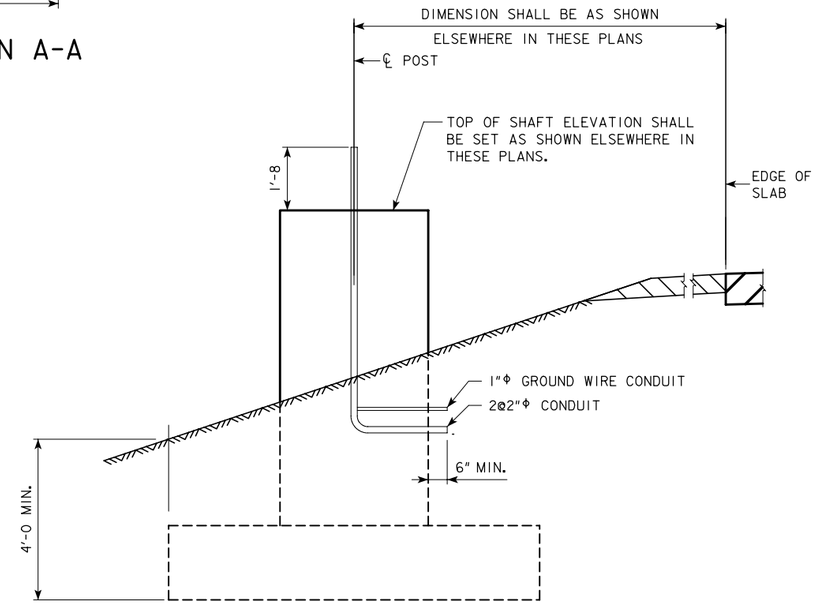


ELEVATION

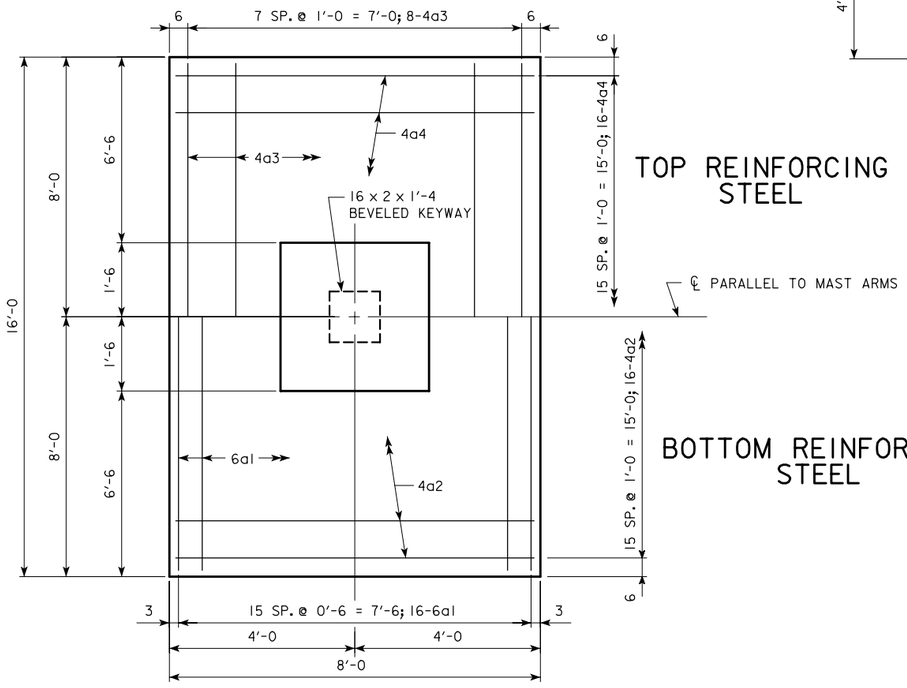
THE JOINT BETWEEN THE SHAFT AND FOOTING SHALL BE ROUGH.



SECTION A-A



ELEVATION - TOP OF SHAFT AND BACKFILL



TOP REINFORCING STEEL

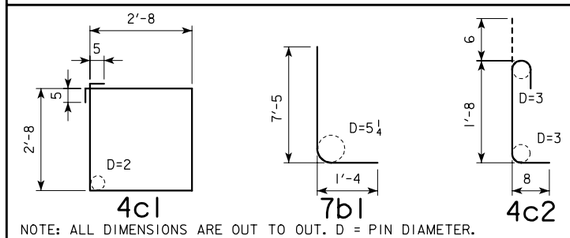
BOTTOM REINFORCING STEEL

FOOTING PLAN

EPOXY-COATED REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	FOOTING BOTT., LONGIT.	—	16	15'-8	377
4a2	FOOTING BOTT., TRANSV.	—	16	7'-8	82
4a3	FOOTING TOP, LONGIT.	—	8	15'-8	84
4a4	FOOTING TOP, TRANSV.	—	16	7'-8	82
7b1	FOOTING TO SHAFT DOWEL	L	20	8'-9	358
4c1	SHAFT HOOPS	□	9	11'-6	69
4c2	SHAFT TIES	⊔	36	2'-10	68
	REINFORCING STEEL - EPOXY COATED TOTAL (LBS.)				1120

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

ESTIMATED CONCRETE QUANTITIES

SHAFT	2.0
FOOTING	9.5
TOTAL - CU. YDS.	11.5

FOOTING ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE	CU. YDS.	11.5
REINFORCING STEEL-EPOXY COATED	LBS.	1120

DESIGN FOR

STEEL ROADSIDE D.M.S. SUPPORT

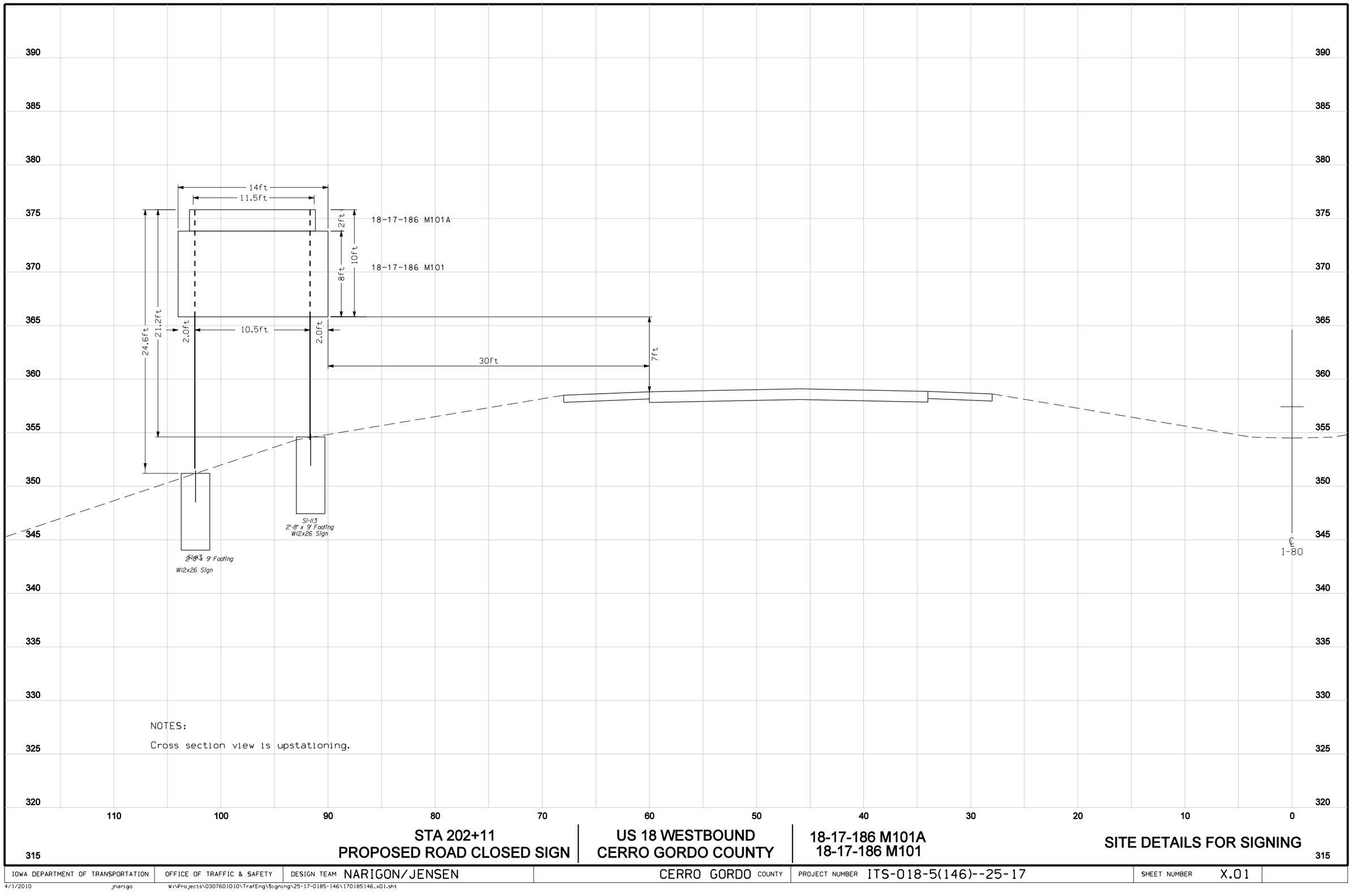
FOOTING DETAILS

STA. 226+25.00 FEBRUARY, 2010

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 5 FILE NO. 30500 DESIGN NO. 210



NOTES:

Cross section view is upstationing.

STA 202+11
PROPOSED ROAD CLOSED SIGN

US 18 WESTBOUND
CERRO GORDO COUNTY

18-17-186 M101A
18-17-186 M101

SITE DETAILS FOR SIGNING

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.01

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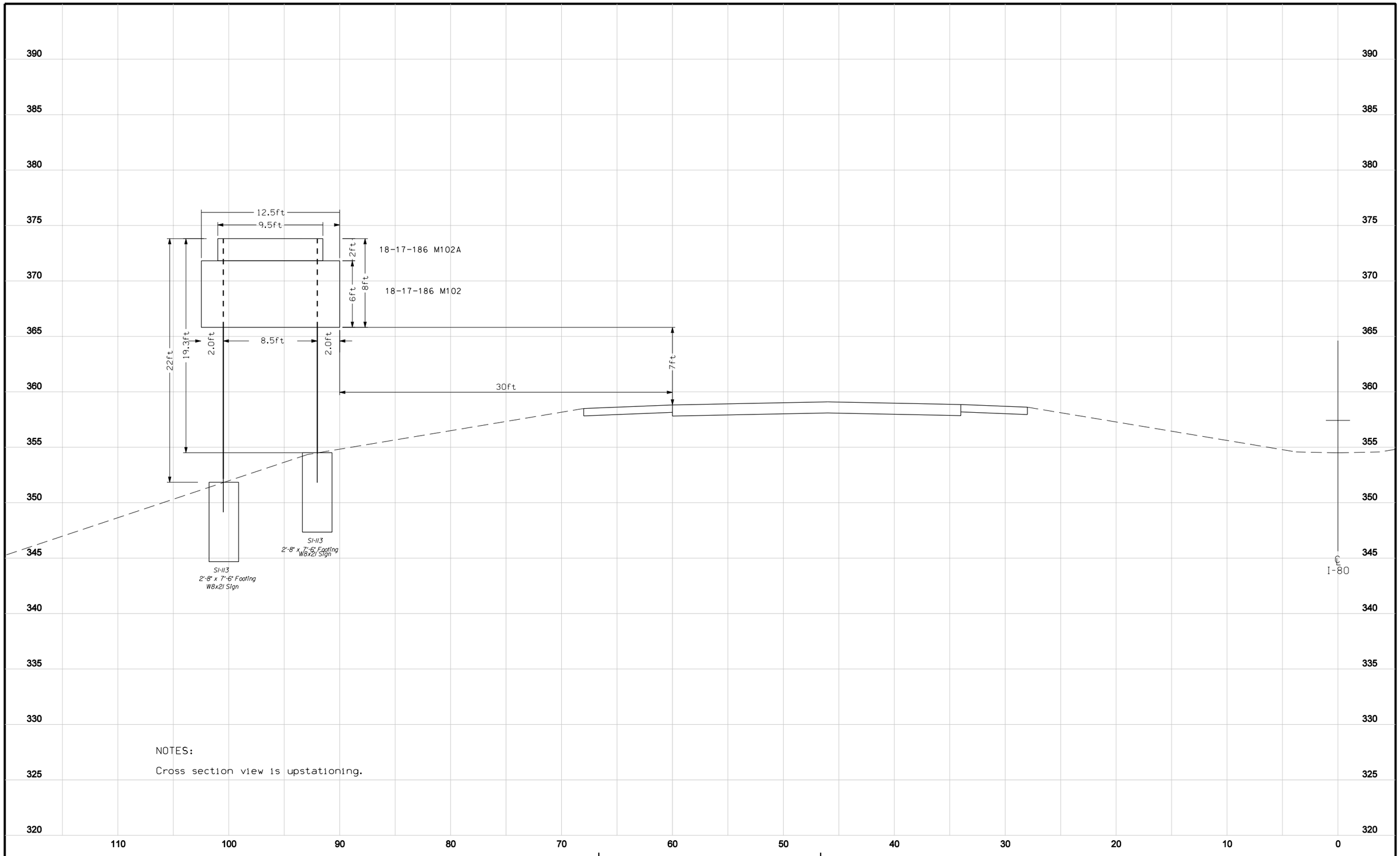

NOTES:

Cross section view is upstationing.

STA 210+16
PROPOSED ROAD CLOSED SIGN

US 18 WESTBOUND
CERRO GORDO COUNTY

18-17-186 M102A
18-17-186 M102

SITE DETAILS FOR SIGNING

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.02

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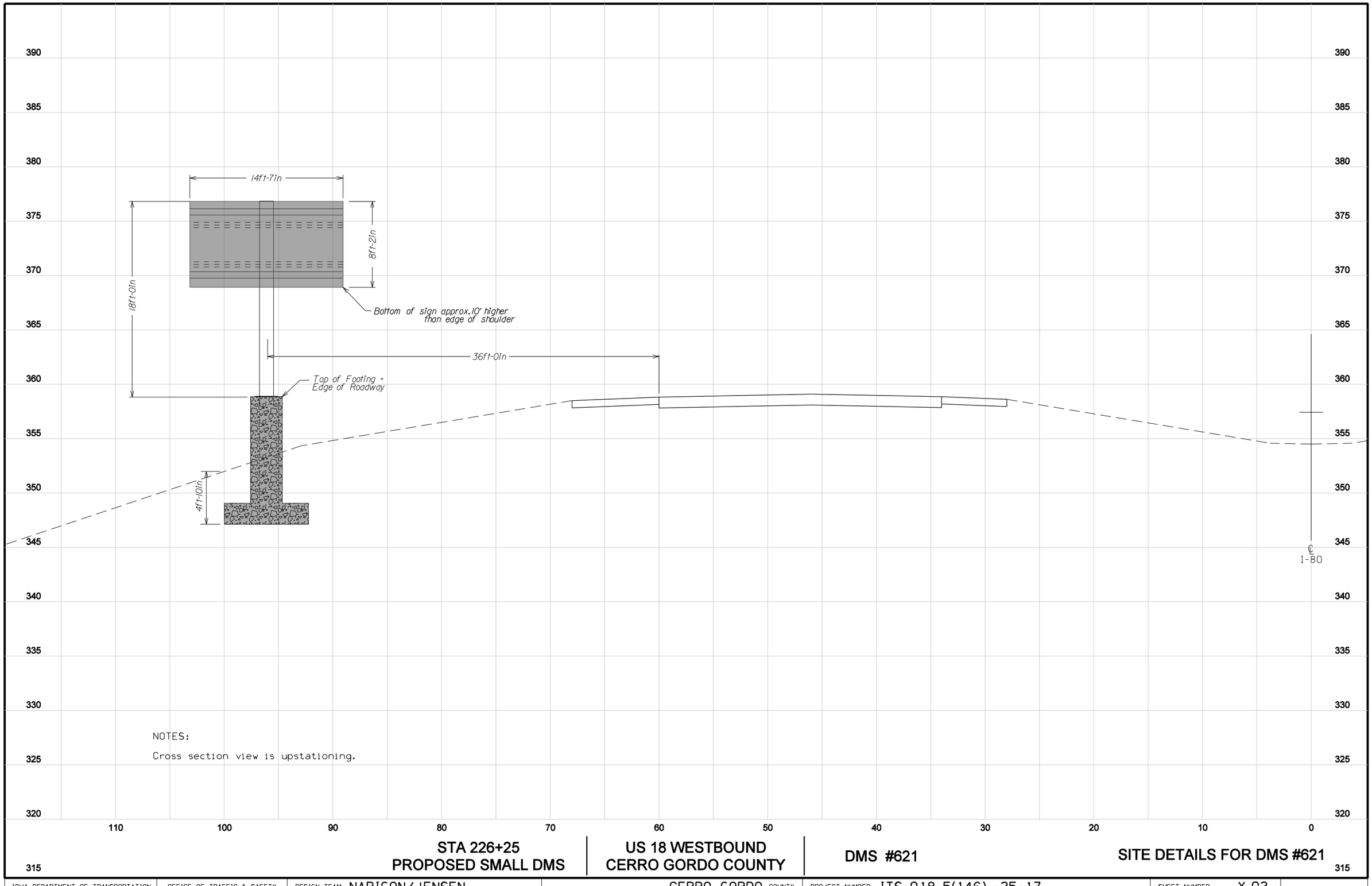

NOTES:

Cross section view is upstationing.

STA 226+25
PROPOSED SMALL DMS

US 18 WESTBOUND
CERRO GORDO COUNTY

DMS #621

SITE DETAILS FOR DMS #621

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.03

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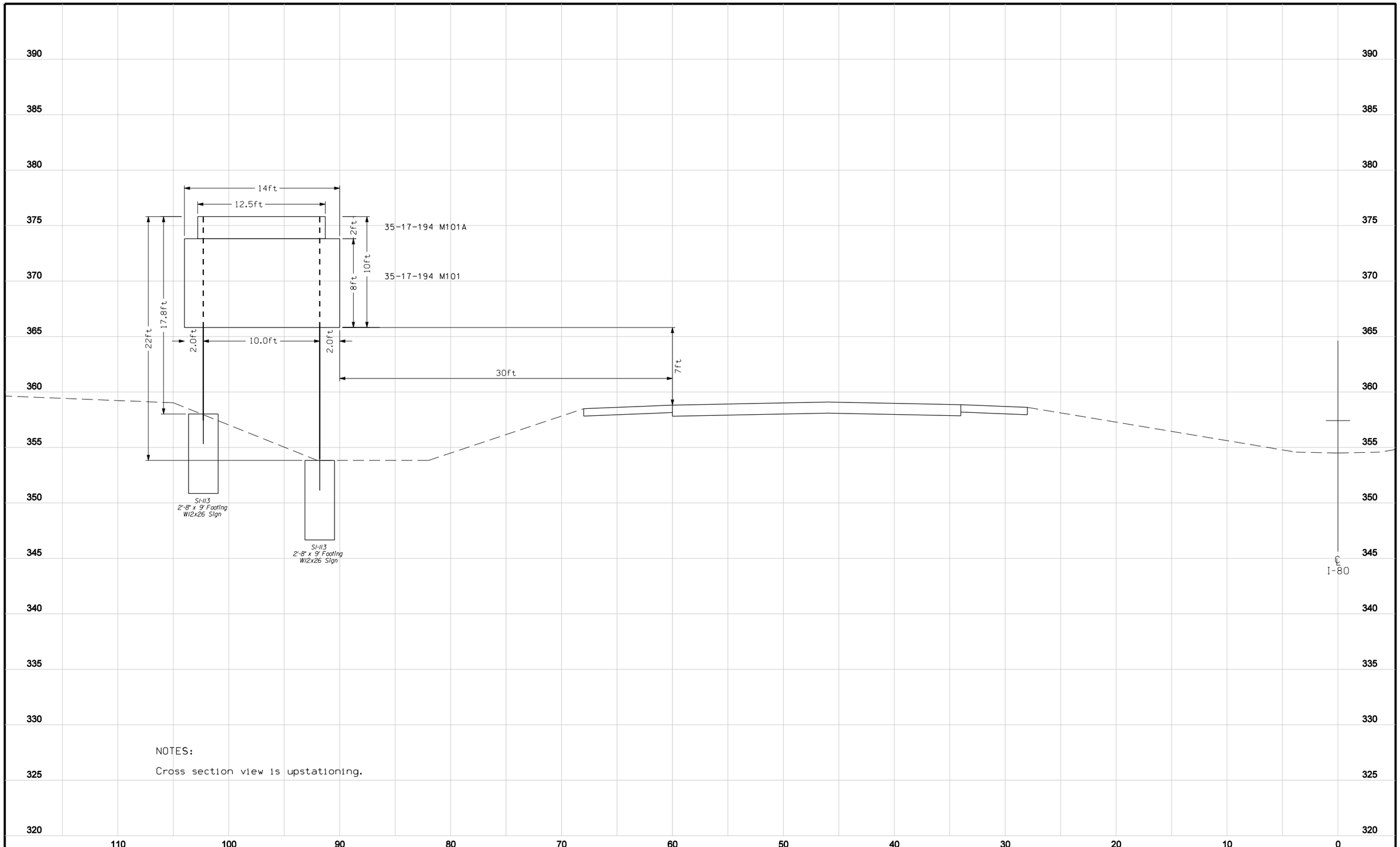

STA 888+85
PROPOSED ROAD CLOSED SIGN

I-35 SOUTHBOUND
CERRO GORDO COUNTY

35-17-194 M101A
35-17-194 M101

SITE DETAILS FOR SIGNING

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.04

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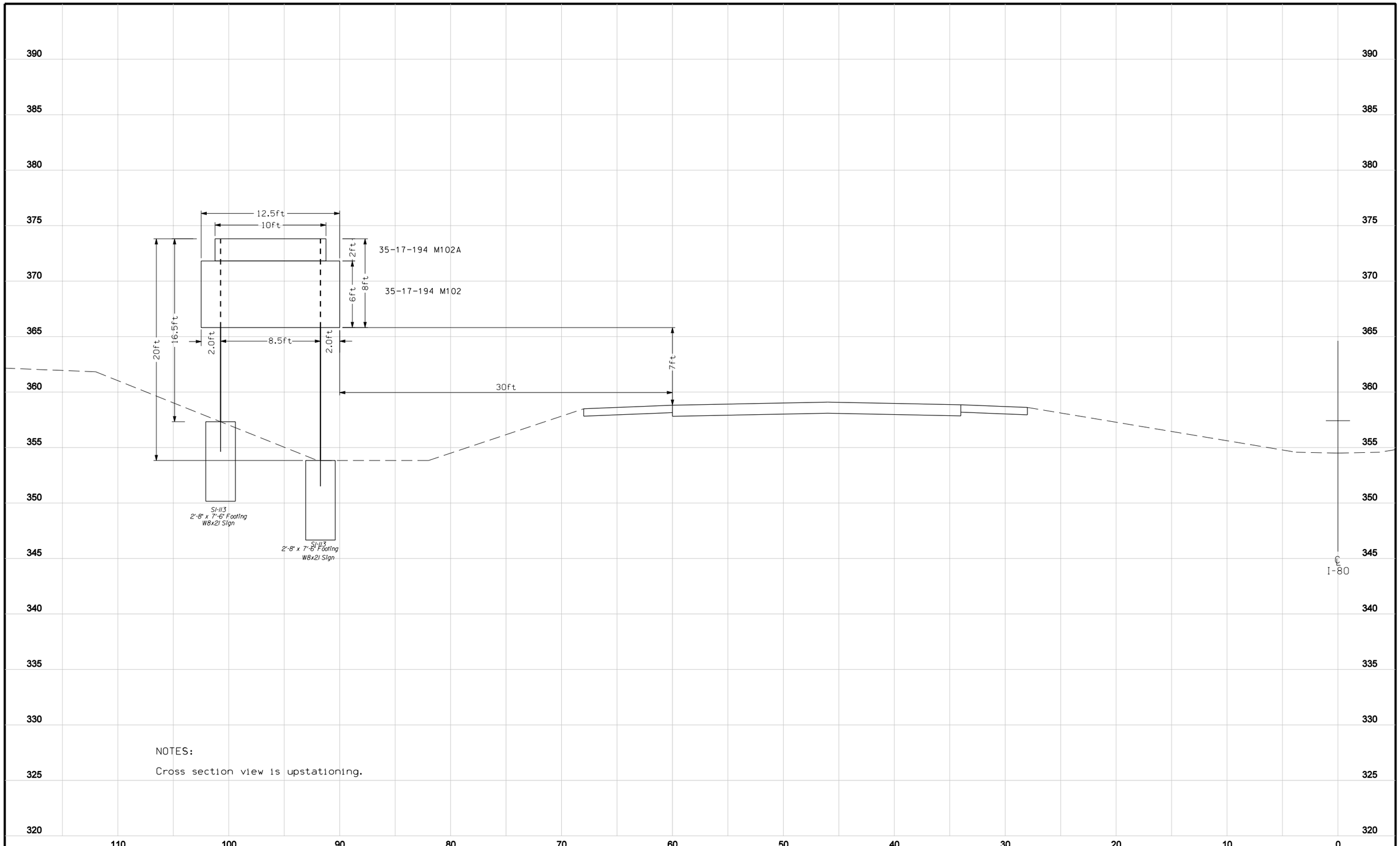

NOTES:

Cross section view is upstationing.

STA 905+90
PROPOSED ROAD CLOSED SIGN

I-35 SOUTHBOUND
CERRO GORDO COUNTY

35-17-194 M102A
35-17-194 M102

SITE DETAILS FOR SIGNING

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.05

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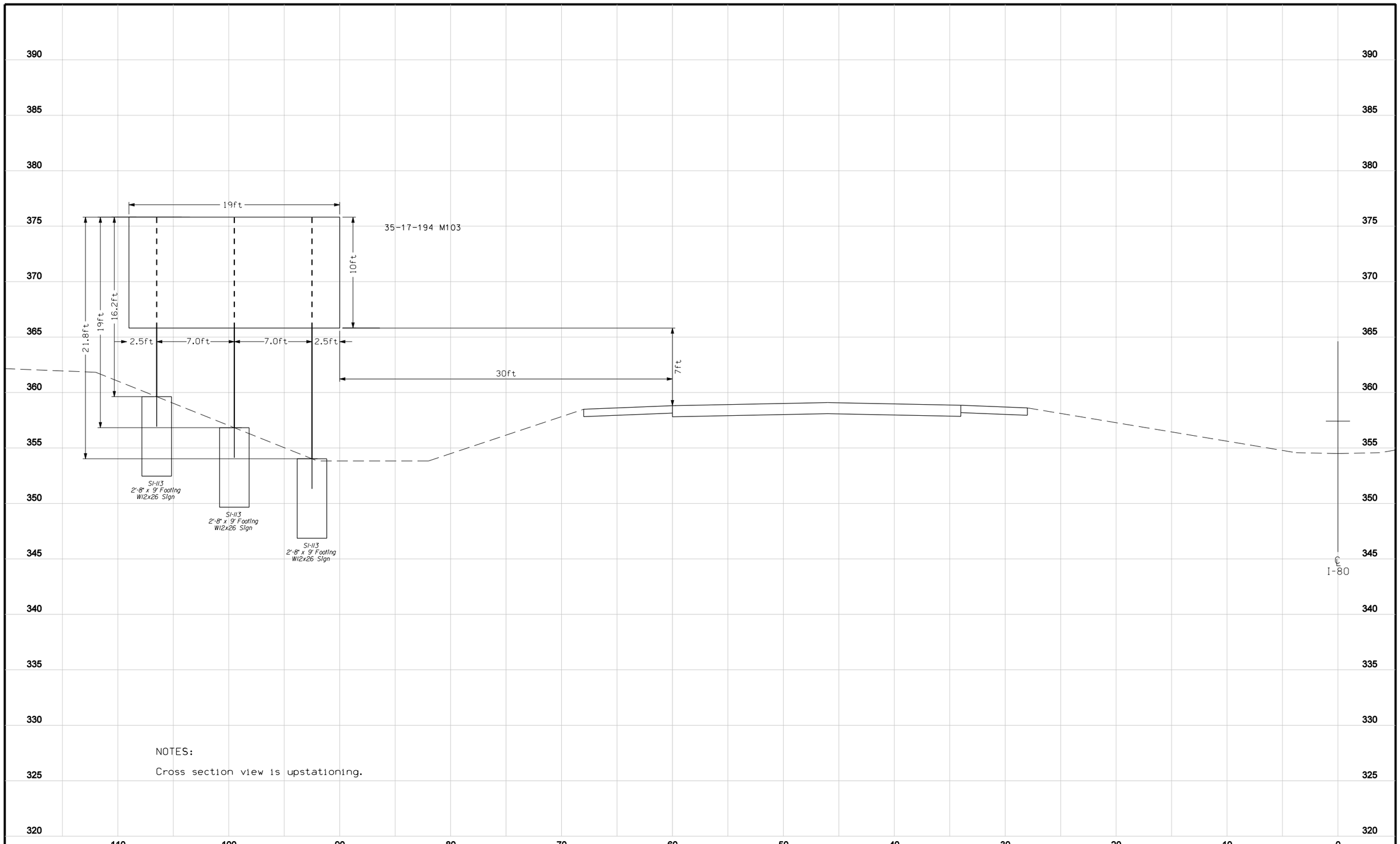

NOTES:

Cross section view is upstationing.

STA 934+50 EXISTING LOGO SIGN	I-35 SOUTHBOUND CERRO GORDO COUNTY	EXISTING FOOD LOGO SIGN - EXIT 194 RELOCATE FROM STA 896+95	SITE DETAILS FOR SIGNING

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.06

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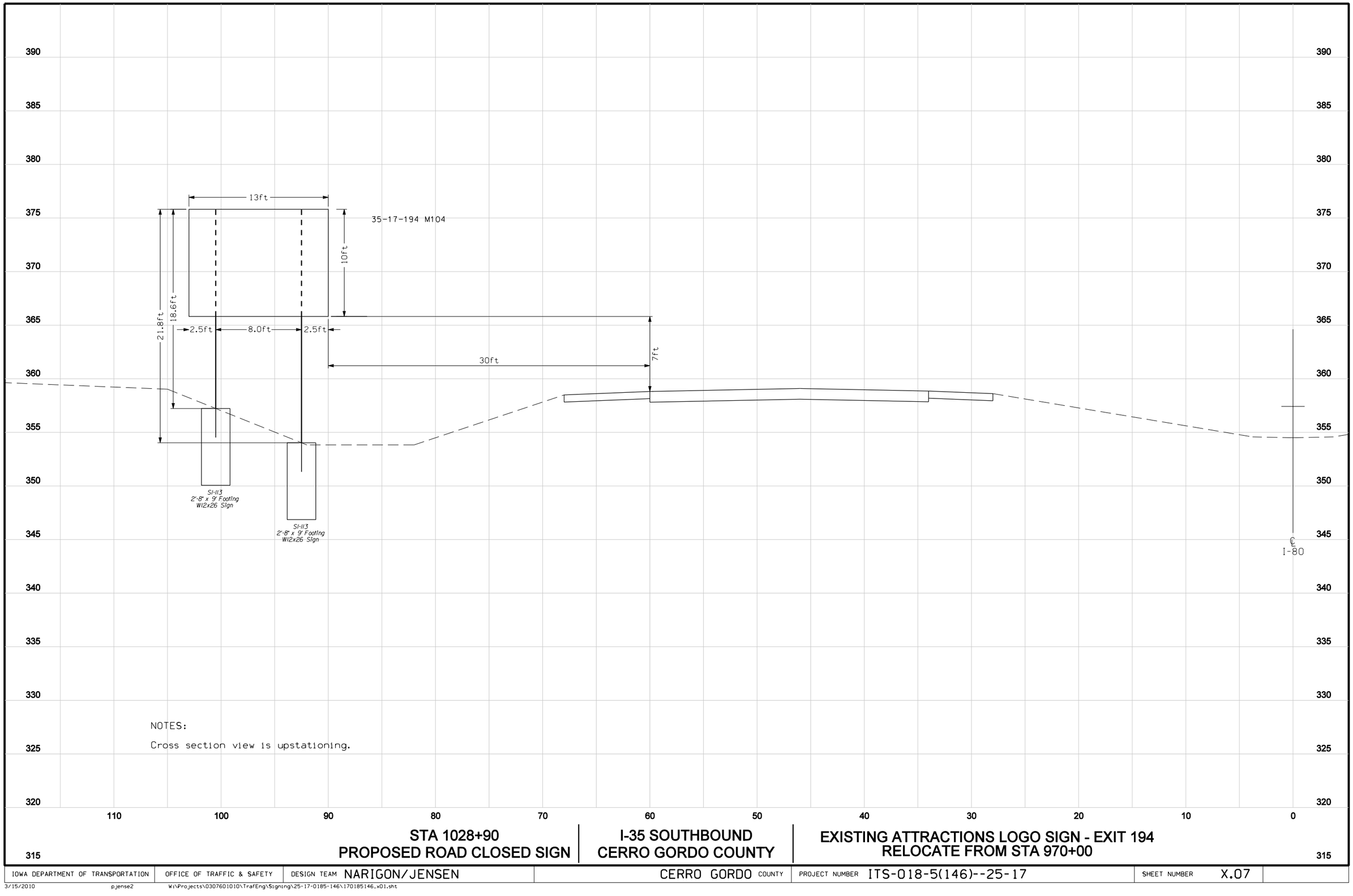

NOTES:

Cross section view is upstationing.

STA 1028+90
PROPOSED ROAD CLOSED SIGN

I-35 SOUTHBOUND
CERRO GORDO COUNTY

EXISTING ATTRACTIONS LOGO SIGN - EXIT 194
RELOCATE FROM STA 970+00

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON/JENSEN	CERRO GORDO COUNTY	PROJECT NUMBER ITS-018-5(146)--25-17	SHEET NUMBER X.07

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